

S0022-3999(98)00022-1

EXPLORING THE VALIDITY OF THE CHALDER FATIGUE SCALE IN CHRONIC FATIGUE SYNDROME

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(Received 23 October 1997; accepted 9 February 1998)

Abstract—The Chalder fatigue scale is widely used to measure physical and mental fatigue in chronic fatigue syndrome patients, but the constructs of the scale have not been examined in this patient sample. We examined the constructs of the 14-item fatigue scale in a sample of 136 chronic fatigue syndrome patients through principal components analysis, followed by correlations with measures of subjective and objective cognitive performance, physiological measures of strength and functional work capacity, depression, anxiety, and subjective sleep difficulties. There were four factors of fatigue explaining 67% of the total variance. Factor 1 was correlated with subjective everyday cognitive difficulties, concentration difficulties, and a deficit in paired associate learning. Factor 2 was correlated with difficulties in maintaining sleep. Factor 3 was inversely correlated with grip strength, peak VO_2 , peak heart rate, and peak functional work capacity. Factor 4 was correlated with interview and self-rated measures of depression. The results support the validity of mental and physical fatigue subscales and the dropping of the “loss of interest” item in the 11-item version of the fatigue scale. © 1998 Elsevier Science Inc.

Keywords: Chronic fatigue syndrome; Fatigue; Validity; Questionnaire; Cognitive performance; Physiology.

INTRODUCTION

Chalder et al. [1] developed a brief self-rated 14-item instrument that measures the symptoms of mental and physical fatigue that are thought to be pathognomonic to chronic fatigue syndrome (CFS) [2, 3]. The Chalder fatigue scale has been used recently in treatment outcome studies in CFS patients [4, 5]. The validity and reliability of their scale has been examined in general practice attenders [1], but not before in CFS patients. However, inspection of the scale raises some questions concerning the validity of some items and its subdivision into physical (eight items) and mental fatigue subscales (six items). For instance, the mental fatigue item “loss of interest” is a cardinal symptom of depression [6]. The item “feeling sleepy or drowsy” could be related to problems with maintaining sleep at night [7] rather than physical fatigue items related to loss of stamina or strength, or mental fatigue symptoms such as poor concentration and word-finding difficulties. The physical fatigue subscale item “problems starting things” could be due to loss of motivation or an inability to organize oneself instead of a physical problem. We examined the validity of the

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constructs of physical and mental fatigue of the 14-item Chalder fatigue scale against a variety of subjective and objective measures of physical and mental functioning and mood and sleep disturbance.

METHOD

Subjects

Patients with CFS over the age of 18 years were recruited from consecutive referrals to a university department of medicine out-patient clinic from consultant physicians and general practitioners across northwestern England and northern Wales. All patients were medically assessed by a doctor under the direct supervision of a consultant physician. A full history, physical examination, and laboratory investigations (full blood count, ESR, biochemistry, creatinine phosphokinase, c-reactive protein, and immunological screen including thyroid antibodies) were carried out.

Inclusion criteria specified that patients had to meet operationalized "Oxford" research criteria for CFS [2]: (a) a principal complaint of fatigue exacerbated by physical activity (and usually mental activity) of 6 months duration; (b) impairment in three of four areas of activity (activities of daily living, occupational, social, or leisure activities); (c) no medically significant cause of fatigue verified by a consultant physician; and (d) none of the following psychiatric disorders, schizophrenia, bipolar disorder, eating disorder, or alcohol or illicit drug abuse, verified by a consultant or senior registrar in psychiatry.

Exclusion criteria were: (a) a history of ischemic heart disease; (b) the presence of suicidal ideation; and (c) an inability to read and write English. No other inclusion or exclusion criteria were employed. All subjects were participating in a treatment trial of graded exercise and fluoxetine. Patients gave written informed consent to participation in the trial and ethics approval was obtained.

Assessments

All patients received the following assessments:

1. The Chalder fatigue scale [1] using Likert scoring.
2. The Hospital Anxiety and Depression Scales [8] to measure self-rated anxiety and depression.
3. Patients were given a standardized psychiatric interview of demonstrated validity and reliability by a psychologist using the revised Clinical Interview Schedule (CIS-R) [9]. The interview includes four questions about difficulties with concentration, which can be scored from 0 to 4. Supplementary questions were asked to enable the psychologist to make a diagnosis in accordance with DSM-III-R criteria [6].
4. A physiotherapist performed a physiological assessment that comprised measurement of height, weight, body fat, grip-strength for each hand using a dynamometer, heart rate, oxygen consumption in a minute (using a PK Morgan Exercise Test System), and workload at peak functional work capacity on a Bosch ERG-551 electronically braked cycle ergometer, calculated as the amount of oxygen (in milliliters) consumed in the final minute of exercise per kilogram of body weight.
5. The self-rated, 25-item Cognitive Failures Questionnaire [10] with each item scored on a five-point scale measuring the frequency of everyday minor cognitive problems.
6. A self-report sleep questionnaire that determined the presence or absence of difficulties initiating sleep, difficulties maintaining sleep, and early morning waking for 1 hour or more on most nights in the preceding 6 months [11].

In addition, a sample of 50 CFS patients were given a computerized experimental paired associate learning test [12]. Twelve pairs of one-syllable four-letter nouns were presented on the computer screen. After all pairs had been presented twice, subjects had to write all the pairs of words they could remember without any prompt (free recall) and to supply the second word of each pair after the first was presented (cued recall). Free recall is usually considered to require more effort than cued recall so subjects whose free recall performance was relatively worse than their cued recall performance might be considered to show impaired effortful cognition [13, 14]. As a crude measure of this, the difference between cued recall of pairs and free recall of pairs was calculated for each patient.

All patients gave written informed consent to all assessments reported and the study was approved by an ethics committee. All assessments were completed before treatment except cognitive testing and the sleep questionnaire, which were completed in the first week of treatment.

Statistical analysis

Statistical analysis was carried out using SPSS for Windows (release 6). The distribution of the 14 items of the fatigue scale in the 136 CFS patients was examined. Scores on eight items were normally distributed, but six items ("tiredness," "resting more," "lacking energy," "feeling weak," "feeling sleepy or drowsy," and "starts things without difficulty but gets weaker as goes on") were highly skewed with

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