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The Patient-Specific Functional Scale was valid for group-level change comparisons and between-group discrimination

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Abstract

Objectives: To examine the validity of the Patient-Specific Functional Scale (PSFS) for the assessment of group-level change and between-group discrimination in group-level data.

Study Design and Setting: We collected complete baseline and follow-up PSFS data in 1,181 consecutive patients reporting to physical therapy with a musculoskeletal disorder. Physical function was assessed at the baseline and final physical therapy visits using the PSFS and four region-specific patient-reported outcome (PRO) measures: The Neck Disability Index, Oswestry Disability Index, Upper Extremity Functional Index, and Lower Extremity Functional Scale. Global Rating of Change (GROC) was assessed at discharge. We assessed data distribution and floor and ceiling effects. Correlation and linear regression analyses assessed concurrent, convergent, and discriminant validities of PSFS baseline, final, and change scores across the cohort. One-way ANOVA was used to test for differences in PSFS scores among strata defined by region-specific PRO score and GROC. Cohen's *d* was used to assess responsiveness.

Results: Results supported the concurrent, convergent, and discriminant validities (all $P < 0.001$), scale consistency ($P < 0.001$ omnibus, $P < 0.05$ post hoc tests), distribution, and responsiveness of the PSFS for both between-group discrimination and assessment of change over time in group-level data. The PSFS performed better than comparison PRO measures in most comparisons.

Conclusion: These results indicate that the PSFS is an appropriate measure for statistical comparisons in clinical research.

Keywords: Outcome assessment; Physical function; Questionnaires; Instrumentation; Psychometrics; Patient-specific instruments; Measurement properties; Musculoskeletal diseases

1. Introduction

Patient-reported outcomes (PROs) are a mainstay of clinical epidemiology. There are several forms of PRO instruments for measuring physical function (PF). These comprise generic (multidimensional, general health and function, eg, SF-36), disease-specific (specific to one disorder or disease class, eg, Arthritis Impact Measurement Scale), region-specific [specific to body region, eg, Neck Disability Index (NDI) or Lower Extremity Functional Scale (LEFS)], domain-specific (limited to a single dimension of health or function, eg, pain or stair climbing), and patient-specific forms of PRO instruments [eg, the Patient-Specific Functional Scale (PSFS)] [1]. All but the latter are standardized instruments with the content (questions) preset and may be referred to as ''fixed-item'' instruments [2].

Data obtained by fixed-item instruments have the advantage of being comparable among patients and between patient groups and are convenient to reproduce and administer. However, there are concerns that fixed-item instruments may miss issues that are important to individual patients, while at the same time requiring responses to items that are not important to some individuals, thereby

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What is new?

Key findings

- Our results supported the scale consistency, concurrent, and discriminative validities, distribution, and responsiveness of the Patient-Specific Functional Scale (PSFS) for both between-group discrimination and assessment of change over time in group-level data.

What this adds to what was known?

- The PSFS is the most widely used and widely investigated patient-specific outcome measure, but its validity for characterizing group-level differences had not been established. In this, the first study to investigate the validity of PSFS data for characterizing group-level change and between-group discrimination in group-level data, we provide evidence supporting the validity of the PSFS for assessing group-level change over time and comparing or discriminating groups on the basis of physical function.

What is the implication and what should change now?

- The perception that the PSFS is not appropriate for use in group-level data is unfounded.
- Clinical research using the PSFS to investigate group-level change over time, compare groups, or discriminate groups on the basis of physical function can be interpreted with confidence.

blunting the ability of the instrument to detect and respond to important patient-level changes. Patient-specific instruments were developed in response to this perceived problem. These generally use a standardized format to acquire, from each individual patient, a short list of the difficulties most salient to that patient, obtain a rating on each difficulty and reassess those same difficulties at follow-up time points. They thereby address individual preferences and priorities and assess only those issues important to the individual.

This individualized content has resulted in excellent responsiveness to change in individual-level scores, which has made patient-specific instruments popular in clinical practice settings [2–4]. A criticism leveled at patient-specific instruments, however, is that the inherent lack of item standardization renders comparisons among and between patients invalid, and thus they are not well accepted by researchers interested in comparing group-level data [4,5].

Several patient-specific instruments have been developed and investigated [2,3]. The most commonly used among these is the PSFS developed by Stratford et al. [6]. This instrument has been widely used [4] and widely investigated [3]; however, no evidence is available establishing the validity of the PSFS for assessing group-level PF change over time, for making comparisons between groups, or for making discriminations within groups on the basis of PF status.

1.1. Objective

The objective of this study was to investigate the validity of the PSFS for assessing group-level change and between-group discrimination for group-level data.

2. Method

2.1. Design

This was a prospective multicenter inception cohort study using repeated measures at baseline (T_0) and end point (T_1). The National Ethics Committee of the New Zealand Ministry of Health approved the study (reference number MEC/07/27/EXP).

2.2. Subjects and setting

Patients with musculoskeletal disorders presenting to physical therapists and undergoing an episode of care at any of five University of Otago School of Physiotherapy Clinics (located in three New Zealand cities) over a 6-month period in 2007 were eligible. Patients were included if they were older than 18 years and reported a problem in their neck, back, or upper or lower extremity; this essentially included all musculoskeletal complaints, both acute and chronic.

2.3. PRO assessment

At their baseline presentation, all eligible patients indicated the area of their symptoms using a body diagram, and nonclinical staff administered the corresponding region-specific PRO instrument: NDI [7], Oswestry Disability Index (ODI) [8], Upper Extremity Functional Index (UEFI) [9], or LEFS [10]. The region-specific instruments used were chosen primarily on the basis of being commonly used and validated instruments and secondarily to minimize burden on staff in participating centers and reduce scoring errors: the NDI and UEFI share the same format, number of questions, and scoring as ODI and LEFS, respectively. Clinical staff then administered the PSFS and the Numeric Pain Rating Scale (NPRS) [11] during the initial patient assessment. The PRO instruments used in this study are described in Table 1.

At follow-up visits (the second, sixth, and/or discharge visits), patients were again asked to complete these PROs, as well as the 15-point Global Rating of Change (GROC) instrument, a commonly used external criterion for clinically important change [12].