Screening Poststroke Fatigue; Feasibility and Validation of an Instrument for the Screening of Poststroke Fatigue throughout the Rehabilitation Process

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Objective: Our objective is to investigate the feasibility and validity of a new instrument to screen for determinants of poststroke fatigue during the rehabilitation process. *Design and Setting:* This prospective cohort study was conducted within the stroke department of a rehabilitation center. *Participants:* The participants in the study were postacute adult stroke patients. The Detection List Fatigue (DLF) was administered 2 weeks after the start of the rehabilitation program and again 6 weeks later. *Main Outcome Measures:* To determine the construct validity, the Hospital Anxiety and Depression Scale, the Checklist Individual Strength subscale fatigue, and the Fatigue Severity Scale—7-item version were administered. A fatigue rating scale was used to measure the patients' fatigue experience. Frequency analyses of the number of patients reporting poststroke fatigue determinants according to the DLF were performed. *Results:* One hundred seven patients (mean age 60 years) without severe communication difficulties were included in the study. The DLF was easy to understand and quick to administer. The DLF showed good internal consistency (Cronbach's alpha: .79 and .87), high convergent validity (r_s = .85 and r_s = .79), and good divergent validity (r_s = .31 and r_s = .45). The majority of the patients (88.4%-90.2%) experienced at least 2 poststroke fatigue (PSF) determinants, of which "sleeping problem" was most frequently reported. *Conclusions:* The DLF is a feasible and valid instrument for the screening of PSF determinants throughout the rehabilitation process in stroke patients. Future studies should investigate whether the use of the list in determining a treatment plan prevents the development of PSF. **Key Words:** Stroke—fatigue—validity—signs and symptoms—rehabilitation.

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Poststroke fatigue (PSF) is among the most prevalent symptoms after stroke.[1,2] It is described as a subjective experience of extreme and persistent tiredness, weakness, or exhaustion, which can present itself mentally, physically, or both, and which is unrelated to previous exertion levels.[3-5] The lack of energy and physical tiredness are described as excessive, abnormal, chronic, and problematic, causing pervasive difficulties in stroke patients.[6] Furthermore, poor physical and psychological recovery after stroke is related with the occurrence of PSF.[2,7-10] The prevalence of PSF in patients ranges between 35%[11] and 77%.[1] It is considered a complex phenomenon and the number of chronic stroke patients reporting abnormal fatigue levels remains stable over time.[12] Although the exact mechanisms are still largely unknown, PSF appears to be multifactorial.[3,9,12,13] Factors associated with PSF include depression,[14-16] aphasia,[8] a reduced level of locus of control,[14] a higher level of anxiety, a reduction of functional health status, pain, and poor physical fitness.[17] Limited evidence is available for the treatment of patients with PSF, and so far, a multidisciplinary treatment approach involving cognitive behavioral therapy and a graded activity program has been proven effective.[17]

There is no clear definition of PSF and no derivative instrument has been developed specifically for measuring PSF. For that reason, a large variety of fatigue rating scales (FRSs), which are not developed specifically for measuring fatigue in a population of stroke patients, have been used in research.[18-20] The methodological qualities of these instruments in a population of stroke patients are largely unknown, and many statements in these instruments can be confused with the neurological symptoms of the stroke. A question such as "Do you feel weak?" can be interpreted both as fatigue as well as muscle weakness due to hemiparesis.[20] In addition, most instruments measure either mental or physical fatigue, whereas stroke patients often report both.[17] Although it is difficult to measure fatigue, various PSF determinants are described in literature. We identify a determinant as "an element or risk factor that identifies, contributes or relates to a disease."[21]

Determinants of PSF include, for example, reduced activity or subjective fatigue experience.[3,22,23] Sleeping problems can contribute to the development of PSF as well.[3,24-26] For this reason, we considered a sleeping problem as a PSF determinant.

Factors such as cognitive or physical impairments after stroke can influence and change these determinants over time. It is vital to screen for determinants during the rehabilitation process because PSF determinants may vary over time. For example, sleep may vary over time because poor sleep quality may be more prominent in the clinical phase. During all phases of the rehabilitation process, it is advisable for professionals to monitor stroke patients on PSF determinants. A recent study[27] stated that the early identification of PSF can improve health-related quality of life and the recovery process of patients. Therefore, secondary prevention is necessary through the systematic screening of determinants.[28] Although PSF determinants should be targeted immediately to prevent chronicity, they often remain unidentified with current assessment tools. For this reason, a screening measure was developed for the identification of PSF determinants throughout the rehabilitation setting. The new screening measure is explicitly not developed to diagnose PSF but to detect PSF determinants. The present study describes the development, feasibility, and validity of this new screening measure.

Methods

This prospective cohort study was approved by the local research ethics committee of Adelante Rehabilitation Centre and was conducted at the stroke department of Adelante Rehabilitation Centre, Hoensbroek, The Netherlands.

Participants

Patients (≥18 years) clinically diagnosed with stroke and following an inpatient or outpatient rehabilitation program were recruited between May 2013 and October 2014. Patients in the postacute phase of the stroke (5-26 weeks poststroke) who were receiving physical therapy or occupational therapy at the time of inclusion were recruited. Patients were excluded if a psychiatric disorder was present, for which medication was prescribed at the time of inclusion. Furthermore, patients with a poor understanding of the Dutch language were excluded, as well as patients who were not able to give adequate verbal informed consent as a result of severe receptive aphasia or severe cognitive impairments.

Procedure

Upon admission to the rehabilitation center, patients were invited to participate to the study. The new screening measure was administered 2 weeks after the start of the rehabilitation program (T1) and again 6 weeks later (T2). The measurements followed the clinical procedure of the rehabilitation center by administering the new screening measure 1 week before the first and second multidisciplinary team meeting of the patient.

To determine the construct validity of the new screening measure, 4 measures were coadministered. Poststroke anxiety and depression were measured with the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) at T1. An FRS was administered at both time points. At T2, the Checklist Individual Strength subscale fatigue (CIS-f),[29] and the Fatigue Severity Scale—7-item version (FSS-7)[30] were administered to identify patients with PSF.