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Fluid Intake Appraisal Inventory: Development and psychometric evaluation of a situation-specific measure for haemodialysis patients' self-efficacy to low fluid intake

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Abstract

Objective: Self-efficacy is an important determinant of health behaviour and reflects a person's belief about their capability to complete a given task. The relationship between self-efficacy and fluid adherence has been investigated, although limited attention has been given to measurement issues. The purpose of this study was to develop a measure of situation-specific self-efficacy for constructive fluid intake behaviour in haemodialysis patients, the Fluid Intake Appraisal Inventory (FIAI). **Methods:** Items were generated from an analysis of empirical studies available in the literature and exposed to an interpretability critique before haemodialysis patients confirmed sufficiency of each item. In a multi-centre study, data from 144 haemodialysis patients were collected regarding general self-efficacy, situation-specific self-efficacy, and estimated fluid consumption. Internal consistency, criterion-related validity, and structural validity were tested. **Results:** The FIAI was found to have high internal consistency (Cronbach alpha 0.96) and the theoretical assumptions for criterion-related validity and known-group validity were supported. Structural validity was not confirmed, however, because the theoretically hypothesized four-factor model was not the prime structure. **Conclusion:** The FIAI was revealed to have satisfactory psychometric properties. The scale may be used in research or in clinical settings to study the mediating effects of self-efficacy or to modify haemodialysis patients' fluid-intake behaviour. Although this first validity study is promising, further validation focusing on reliability and cultural validity is needed.

Keywords: Chronic renal failure; Fluid Intake Appraisal Inventory; Fluid restriction; Psychometric properties; Reliability/validity; Self-efficacy

Introduction

Behaviour change, including altering maladaptive behaviour, is a challenge for patients as well as for their family and the professionals working with them. Moreover, it is often required for successful medical treatment [1]. Knowledge, skills, health beliefs, attitudes and social support are some important determinants of such behaviour change. Self-efficacy is another vital factor in the process of changing behaviour and it is related to the belief that one can carry out behaviour necessary for achieving desired goals [2–4].

Haemodialysis treatment entails the average patient visiting the hospital three times per week for treatment sessions that last approximately 4 h, in combination with a continual nutritional management, an extensive need of medications [5], and the performance of restorative exercise [6]. Studies examining the prevalence of nonadherence to end-stage renal disease therapy [7–14] suggest that many patients are unsuccessful in following diet, fluid, and/or medication regimens. Adherence to recommended fluid

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intake is crucial and it is one of the most difficult regimens to accomplish [1]. An unrestricted fluid intake may have serious consequences [5,11,15,16], especially for a patient with anuria, as the effectiveness of the treatment is reduced by fluid overload.

Questionnaires available for clinical ratings in the field of dialysis are primarily designed to screen patients' non-adherence to diet and fluid restrictions, e.g., the Dialysis Diet and Fluid Nonadherence Questionnaire [17] and the Renal Adherence Behaviour Questionnaire [18]. However, neither of these includes a variety of possible determinants of health-related behaviour in dialysis, in particular psychosocial factors that have been investigated by several researchers [14,16,19–23]. The mediating impact of self-efficacy on behaviour change has been discussed by several authors [13,24–28] but only limited attention has been given to the psychometric properties of instrument(s) involved.

Self-efficacy theory and measurement

In the self-efficacy theory, emphasis is placed on individuals' belief about their ability to exercise control over the skills needed to complete a given attainment [3]. That is, individuals develop domain-specific beliefs or expectations related to their own skill. These skills guide, in turn, their behaviour by determining what they attempt to achieve and the amount of effort they put in to a particular task.

Based on the assumption that various forms of psychological support may increase a person's expectations concerning his/her own efficacy [2], the self-efficacy construct involves several dimensions that have implications for its measurement [3,29]. In addition, such an assessment may either be related to situation-specific behaviour or be treated as a concept that intersects multiple behaviours or situations [29]. To achieve explanatory and predictive power, a self-efficacy scale must be tailored to assess a functional domain of the behaviour that represents gradations of tasks within the domain (generality) and this in a context of varying situations (magnitude). In domains that do not have an inherent order of difficulty, contextual arrangements can be used to assess the person's perceived efficacy of performing behaviour within increasingly challenging circumstances. Sufficient difficulties need to be present in the scale to provide for a range of efficacy and to avoid obtaining a floor or ceiling effect [3,29]. By phrasing the items in terms of "can do" rather than "will", a judgement of capability is elicited instead of a statement of intention [2,3,29]. The strength of the capability is indicated in a numeric scale, and the higher the score of perceived efficacy, the greater is the likelihood that the person will persevere and succeed in performing the behaviour [3,29].

The procedures used to measure self-efficacy in earlier adherence studies with end-stage renal disease populations could be divided into two major approaches. Some researchers [13,25,26] have performed the measure with a general focus on mastery. Others [24,28] have performed theoretically rooted measures that are more or less domain specific. The purpose of this study was to develop and test a self-administered scale to measure situation-specific self-efficacy for restricting fluid intake and to examine the psychometric properties of the scale in a population of haemodialysis patients.

Method

Devising the scale

The three dimensions of self-efficacy [3] (generality, magnitude, and strength) guided the devising process [30]. The items comprising the scale originated from a review of literature that dealt with dialysis patients' limited fluid intake [25,31–33]. To capture the dimension of generality, items were developed to assess perceived efficacy in a number of situations associated with demanding conditions of limited fluid intake. These situations were considered characteristic for a dialysis patient's fluid consumption and

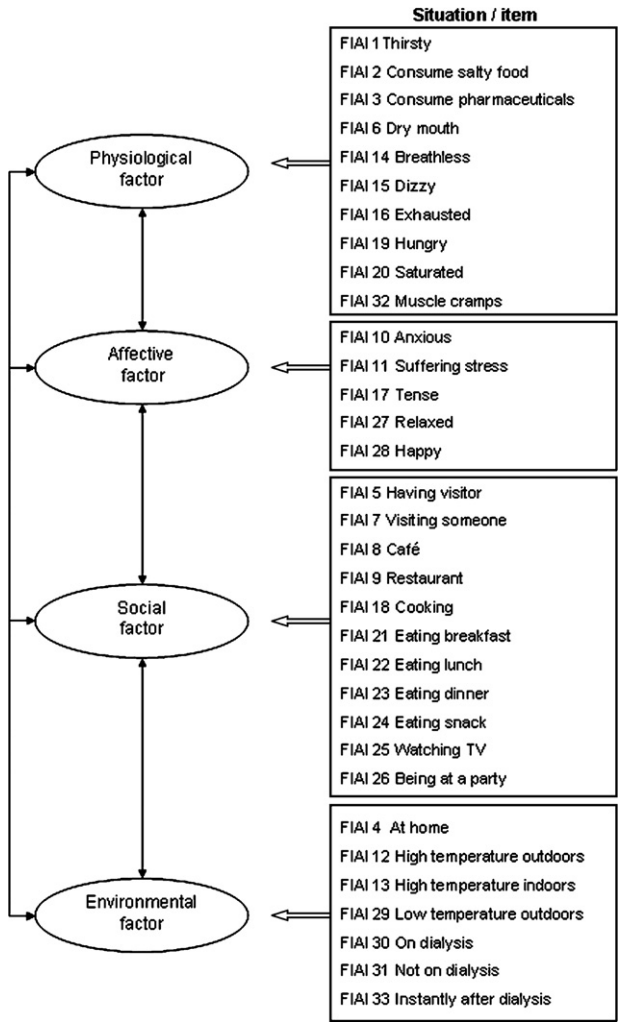

Fig. 1. Hypothesized four-factor, first-order confirmatory factor analysis model of the FIAI structure, including numbered item per factor.