Heart & Lung 43 (2014) 555–560

Contents lists available at ScienceDirect

Heart & Lung

journal homepage: www.heartandlung.org

Care of Stroke Patients and Their Families

Psychometric properties of the Caregiver Preparedness Scale in caregivers of stroke survivors

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ARTICLE INFO

Article history:
Received 12 June 2014
Received in revised form
19 August 2014
Accepted 19 August 2014
Available online 18 September 2014

Keywords:
Caregivers
Preparedness
Psychometrics
Stroke
Validity
Reliability

ABSTRACT

Objective: To evaluate the psychometric characteristics of the Caregiver Preparedness Scale (CPS) in caregivers of stroke survivors.
Background: Caregiver preparedness can have an important impact on both the caregiver and the stroke survivor. The validity and reliability of the CPS has not been tested for the stroke-caregiver population.
Methods: We used a cross-sectional design to study a sample of 156 caregivers of stroke survivors. Construct validity of the CPS was evaluated by confirmatory factor analysis (CFA). Internal consistency and test-retest reliability were also evaluated.
Results: Caregivers were, on average, 54 year old (SD = 13.2) and most were women (64.7%). CFA supported the unidimensionality of the scale (comparative fit index = 0.98). Reliability was also supported: item-reliability index and item–total correlations above 0.30; composite reliability index = 0.93; Cronbach's alpha = 0.94; factor score determinacy = 0.97; and test-retest reliability = 0.92.
Conclusion: The CPS is valid and reliable in caregivers of stroke survivors. Scores on this scale may assist health-care providers in identifying caregivers with less preparedness to provide specific interventions.

Introduction

In the industrialized world, 25% of people aged 65–69 years and 50% of people aged 80–84 years are affected by chronic health conditions.[1] The majority of these older adults are cared for by informal caregivers such as family or friends in the community.[2] In the United States, approximately 43.5 million informal caregivers provide care to older adults with chronic disease.[3] In Europe, 125 million people serve as informal caregivers for people with functional limitations in performing activities of daily living (ADL).[4,5] In Italy, where this study was conducted, more than 500,000 older adults are cared for by informal caregivers in their home. The majority of older adults suffer from chronic and complex conditions (e.g., hypertension, heart disease, diabetes, stroke, depression, and cancer) and require assistance in daily care from their family members.[6] The number of caregivers is expected to increase in the near future because the population is rapidly aging.[7]

Caregivers are important resources for health-care systems and society.[8,9] In the United States, economic value of caregiving was estimated to be $350 billion in 2006.[9] Several studies, however, found that caregivers may not be well prepared to provide appropriate care, such as monitoring symptoms, coordinating care, or recognizing and intervening in case of complications.[2,10,11] Less prepared caregivers worry about care,[12] feel burden, strain and tension,[13] and experience mood disturbances.[14] In addition, caregivers with less caregiving preparedness have poorer health than

Abbreviations: ADL, activities of daily living; CFA, confirmatory factor analysis; CFI, Comparative Fit Index; CPS, Caregiver Preparedness Scale; ICC, Intraclass Correlation Coefficient; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardized Root Mean Square Residual; TLI, Tucker and Lewis's Incremental Index.

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http://dx.doi.org/10.1016/j.hrtlng.2014.08.004

those with better caregiving preparedness.[15] In contrast, well-prepared caregivers with appropriate skills and knowledge in caring for their relatives are less depressed and anxious and have higher levels of hope.[16]

The majority of strokes, especially ischemic strokes, occur among older adults. The stroke incidence rate is estimated to be between 7.5 and 10.1 per 1000 persons.[17,18] Stroke survivors are generally discharged home in a short period of time and require assistance in performing ADL, even after rehabilitation.[19] Caregivers of stroke survivors play a pivotal role in assisting in the physical, cognitive and emotional needs of stroke survivors[20]; however, they often feel unprepared for their new caregiver role.[21,22] These issues can cause increased errors in care, duplication of services, and inappropriate or absent treatment for stroke survivors, and even increased risk for patients' readmission to hospital.[23] Several studies demonstrated that well-prepared caregivers can significantly influence stroke survivors' recovery and quality of life.[16,24] Thus, it is important for health-care providers to evaluate preparedness of informal caregivers, especially when the caregiver is beginning the new role as caregiver.

To measure preparedness for caregiving, Archbold et al[25] developed the Caregiver Preparedness Scale (CPS). Caregiver preparedness was defined as perceived preparation of caregivers to care for the physical and emotional needs of the patient. The definition of caregiver preparedness includes the caregiver's perception of their ability to arrange for services for the care recipient and handle emergent situations. Although the CPS was not developed based on a theory of caregiver preparedness, it has been used to measure caregiver preparedness in several caregiver populations such as caregivers for patients with cancer,[10,26] life-threatening illness,[27,28] coronary artery disease,[29] and Parkinson's disease.[12]

Despite wide use of the CPS, to our knowledge only three studies have tested the factorial structure and reliability of the scale. The first study was conducted in the United States,[25] where the CPS was developed, with a sample of caregivers of older adults who required assistance to take medications or for ADL. The factorial structure of the CPS was tested with exploratory factor analysis, which generated one factor explaining 50% of CPS variance. Internal-consistency reliability of the CPS, tested with Cronbach's alpha, was 0.72 at 6 weeks and 0.71 at 9 months after hospital discharge. When the Cronbach's alpha is $\geq$0.70 the research instrument is considered reliable.[30]

Researchers also tested the CPS for validity and reliability on caregivers of palliative care patients in two studies conducted in Australia and Sweden.[26,27] In the Australian study, they evaluated the factorial validity of the CPS with Principal Components Analysis and again, a single factor emerged from the analysis that explained 66.7% of CPS variance. Internal-consistency reliability, estimated with Cronbach's alpha, was also adequate with a coefficient of 0.93. However, test-retest reliability, which is another way to test instrument reliability, was not performed in this study. In the Swedish study,[27] researchers used confirmatory factor analysis (CFA) to test the factorial validity of the scale and the results were good because fit indices, which indicate if the factorial structure of the scale fit the data, were adequate. In fact, the comparative fit index and the non-normed fit index were both 0.99 in this study. When these two indices are $\geq$0.95, the factorial validity is adequate.[31] In this study, the CPS was also shown to have concurrent validity with the Rewards of Caregiving Scale ($r = 0.76$; $p < 0.001$) and the Caregiver Competence Scale ($r = 0.34$; $p < 0.001$). In addition, internal consistency reliability tested with Cronbach's alpha was adequate (0.94), as well as test-retest reliability (0.70) between the baseline and the 6-week follow-up.

Although the CPS has been used to measure caregiver preparedness in stroke caregivers,[32] its psychometric properties have not been tested in this population. This is an important limitation for the use of the CPS in research and clinical practice because instrument validity and reliability may vary across populations.[33] So far, the psychometric properties of the CPS have been tested only on caregivers of older adults and caregivers of palliative care patients, but preparedness in these two populations may differ from preparedness in stroke caregivers. This difference may influence the factorial validity and reliability of an instrument that need to be evaluated to understand if the instrument measures the intended variable with an acceptable measurement error.[34] Therefore, the purpose this study was to evaluate the factorial structure and reliability of the CPS for caregivers of stroke survivors.

Methods

Design

We used a cross-sectional design with a 2-week follow-up for test-retest reliability to conduct this study.

Ethical considerations

The Institutional Review Board at each Hospital where caregivers and stroke survivors were enrolled approved the study. All caregivers and stroke survivors participating in the study provided written informed consent.

Sample and settings

Using a convenience-sampling strategy, we recruited caregivers 3 months after stroke survivors had been discharged home from a total of 10 rehabilitation hospitals located in the following central and southern cities in Italy: Viterbo, Tivoli, Rome, Grottaferrata, Potenza, Guidonia, Cosenza, Ragusa, Naples, and Taranto. Caregivers were asked to be enrolled in the study if they met the following inclusion criteria: 1) being identified as the main informal caregiver by the stroke survivor without receiving any money compensation; and 2) being willing to provide written consent to participate. Caregivers were excluded from enrollment if their stroke patients: 1) had been previously diagnosed with physical/motor disorders such as amyotrophic lateral sclerosis, multiple sclerosis, or Parkinson's disease; 2) had a cancer or severe organ failure known to be associated with poor quality of life; 3) had aphasia, reduced level of consciousness, or a significant cognitive impairment (not oriented to place and people); 4) were not willing to sign the informed consent form. We chose these criteria to ensure that we specifically tested the psychometric characteristics of the CPS in a more homogeneous stroke-caregiver population, rather than in a more heterogeneous population of caregivers. These criteria have been adopted in prior studies.[35–37]

Measures

Caregiver Preparedness Scale.[25] This instrument includes eight items on caregiver preparedness to care for a patient's physical and emotional needs, setting up services, coping with the stress of caregiving, making caregiving activities pleasant for the caregiver and the stroke survivor, responding and managing emergencies, getting help and information from the health care system, and overall preparedness. Examples of the questions on the scale are "How well prepared do you think you are to take care of your family member's physical needs?" and "How well prepared do you think you are to get the help and information you need from the Health Care System?" Each item is rated between 0 (Not at all prepared) to 4 (Very well prepared), and items are summed for a total score that