HEART & LUNG

Developing a shortened measure of negative thinking for use in patients with heart failure

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ABSTRACT

Objective: Negative thinking is a target for treatment of depressive symptoms in patients with heart failure (HF). A brief instrument is needed to measure negative thinking in these patients. The study objective was to shorten the Crandell Cognitions Inventory (CCI) for use in patients with HF.

Methods: Baseline data from outpatients with HF (N = 179, 30% were female, age 60 ± 13 years) were used to evaluate psychometrics of the CCI. Internal consistency reliability was measured with Cronbach's alpha construct validity with hypothesis testing. Principal components analysis was used in shortening. A separate sample of hospitalized patients with HF (N = 77, 49% were female, age 66 ± 11years) was used to validate the shortened CCI (CCI-SF).

Results: The CCI showed evidence of reliability and validity, but there was item redundancy in outpatients with HF. The 12-item CCI-SF showed good evidence of reliability and validity in inpatients with HF.

Conclusion: The results support the reliability and validity of the CCI-SF to measure negative thinking in hospitalized patients with HF.

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The purpose of this study was to develop a psychometrically sound shortened measure of negative thinking for use in patients with heart failure (HF). Negative thinking, a risk factor for depressive symptoms in the general population,[1,2] is a potential target for the treatment of depressive symptoms in patients

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with HF. The presence of depressive symptoms is a significant clinical problem in patients with HF. In a meta-analysis of data from 23 studies, researchers estimated that the prevalence of depressive symptoms was 30% in both outpatients and inpatients with HF.[3]

Depressive symptoms have a profound effect on morbidity, mortality, and health-related quality of life among patients with HF.[4] Patients with HF who have depressive symptoms are twice as likely to die and 2.5 times more likely to be rehospitalized than patients who do not have depressive symptoms.[3] Depressive symptoms also have an important effect on emotional and physical health-related quality of life in patients with HF.[4] Cognitive therapy is a psychotherapeutic intervention for depression that focuses on the reduction of negative thinking. Researchers have begun to test cognitive therapy for depressive symptoms in patients with HF,[5] creating the need for a psychometrically sound measure of negative thinking in patients with HF.

Three of the most commonly used measures of negative thinking are the Automatic Thoughts Questionnaire,[6] Cognitive Checklist–Depression subscale,[7] and Crandell Cognitions Inventory (CCI).[8] In a critical review of these 3 instruments, we found that the CCI has the best potential for measuring negative thinking in patients with HF.[9] In contrast with the Automatic Thoughts Questionnaire that was developed with undergraduate students, the CCI was developed with a clinical psychiatric population. The CCI is also preferable to the Cognitive Checklist–Depression subscale because it captures a wider range of depressive negative thinking content.[8]

The CCI has been used to measure negative thinking in psychiatric outpatients, healthy adults,[8] low-income single mothers,[1] and college women.[10] However, this instrument has not been tested in patients with HF. Furthermore, although the instrument is written at the Flesch-Kincaid third-grade reading level (Microsoft Word 2007, Microsoft Corp, Redmond, WA), the length of the instrument (34 negative thinking items and 11 positive thinking, non-scored buffer items) may be burdensome to patients with HF. We have found that among healthy young adults, filling out the CCI takes approximately 3 to 5 minutes. However, for patients hospitalized with HF who routinely experience fatigue and shortness of breath,[11] administering the CCI via interview takes 10 to 20 minutes. A shortened version of the CCI would be a valuable tool for researchers and clinicians working with patients who have HF.

The original CCI contains 4 scales that measure 4 different types of negative thinking: self-rated inferiority, helplessness, hopelessness, and detachment. These scales are not scored separately. However, the wide range of negative thinking content in the original CCI is a strength of this instrument. Rather than simply selecting one of the scales to use in patients with HF, we chose to shorten the entire instrument. Our goal was to develop a brief instrument that lacks redundancy but still reflects the wide range of negative thinking content from the original instrument.

Theoretic Framework

The cognitive model of depression, developed by Beck,[12] provides the theoretic framework for this study. Beck defined negative thinking as the cognitive triad: automatic, repetitive, depressive thoughts about the self, world, and future.[12] Beck theorized that negative thoughts influence the emotional, behavioral, and somatic symptoms of depression.[12] Later findings from Crandell and Chambless[8] suggest a fourth type of negative thinking—negative thoughts about interpersonal relationships or withdrawal from others.

Negative thinking is a risk factor for depression[4,5] and independently predicts the development of depression among women.[6,7] Negative thinking originates in childhood and dominates the perceptions of depressed persons.[3] Negative thinking worsens and perpetuates depressive symptoms, contributing to a downward spiral of depressive symptoms that may end in major depressive disorder.[2,8] Among patients who are being treated for depression, the presence of negative thinking independently predicts a poorer response to treatment for depression.[9]

Cognitive therapy is based on Beck's cognitive model of depression and focuses on the reduction of negative thinking.[7,12,13] This psychotherapeutic intervention is the predominant nonpharmacologic treatment for depression in the general population[13] and holds promise as an intervention for patients with HF.[14] Patients with HF who had depressive symptoms described experiencing negative thoughts that worsened their depressed mood.[15] Examples of negative thoughts experienced by patients with HF include the following: "Useless; I'm just no good," "I can't justify my existence," and "I'm a burden to my family." By reducing negative thinking, it is theorized that patients will experience improvements in the emotional, somatic, and behavioral symptoms of depression.[12]

Specific Aims

The specific aims of this study were to 1) examine the dimensionality of the original CCI in outpatients with HF; 2) evaluate the internal consistency reliability of the original CCI; 3) evaluate construct validity of the original CCI via hypothesis testing; 4) shorten the CCI using factor analysis, reliability indicators, and item means and standard deviations; and 5) evaluate the internal consistency reliability and construct validity of the CCI short form (CCI-SF) in an independent sample of hospitalized patients with HF.

Previous investigators have found evidence for construct validity of the CCI by demonstrating that the CCI is strongly and positively related to depressive symptoms.[1,8] Therefore, hypotheses used to evaluate construct validity of the original CCI and the CCI-SF in