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Telephone-administered versus live group cognitive behavioral stress management for adults with CFS☆,☆☆

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ABSTRACT

Objective: Chronic fatigue syndrome (CFS) symptoms have been shown to be exacerbated by stress and ameliorated by group-based psychosocial interventions such as cognitive behavioral stress management (CBSM). Still, patients may have difficulty attending face-to-face groups. This study compared the effects of a telephone-delivered (T-CBSM) vs a live (L-CBSM) group on perceived stress and symptomology in adults with CFS.
Methods: Intervention data from 100 patients with CFS (mean age 50 years; 90% female) participating in T-CBSM (N = 56) or L-CBSM (N = 44) in previously conducted randomized clinical trials were obtained. Perceived Stress Scale (PSS) and the Centers for Disease Control and Prevention symptom checklist scores were compared with repeated measures analyses of variance in adjusted and unadjusted analyses.
Results: Participants across groups showed no differences in most demographic and illness variables at study entry and had similar session attendance. Both conditions showed significant reductions in PSS scores, with L-CBSM showing a large effect (partial $\varepsilon^2 = 0.16$) and T-CBSM a medium effect (partial $\varepsilon^2 = 0.095$). For CFS symptom frequency and severity scores, L-CBSM reported large effect size improvements (partial $\varepsilon^2 = 0.19$–0.23), while T-CBSM showed no significant changes over time.
Conclusions: Two different formats for delivering group-based CBSM—live and telephone—showed reductions in perceived stress among patients with CFS. However, only the live format was associated with physical symptom improvements, with specific effects on post-exertional malaise, chills, fever, and restful sleep. The added value of the live group format is discussed, along with implications for future technology-facilitated group interventions in this population.

1. Introduction

Chronic fatigue syndrome (CFS) is a disorder with no established etiology characterized primarily by severe, debilitating chronic fatigue as well as post-exertional malaise and multi-system flu-like symptoms [1,2]. This disorder is frequently associated with comorbidities that collectively result in decrements in social, occupational, emotional, and physical functioning [3]. Patients with CFS often report high levels of emotional distress, and the majority of patients evidence marked dysfunctions in nervous, endocrine, and immune system functioning [2–5]. CFS has prevalence in the United States as high as 2.54%, the majority of whom are females [2,5]. Due to loss in household and work productivity, the economic burden of CFS in the U.S. is estimated to be between $9.1 billion and $23.9 billion annually in direct and indirect costs [6–8].

Abbreviations: ANOVA, analysis of variance; CBSM, cognitive behavioral stress management; CBT, cognitive behavioral therapy; CFS, chronic fatigue syndrome; L-CBSM, live group-based CBSM; PEM, post-exertional malaise; PSS, Perceived Stress Scale; RANOVA, repeated-measures analysis of variance; T-CBSM, telephone-administered group-based CBSM.

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Collectively, CFS is an illness with substantial consequences for patients, their families, and society at large.

Stress could be a suitable target for psychosocial interventions aiming to reduce the burden of this onerous illness. Biopsychosocial conceptualizations of CFS symptoms emphasize the centrality of stress-related processes [9–11]. Evidence, primarily from observational studies, suggests that the ability to cope with stress is associated with physical and mental health outcomes among patients with CFS. For instance, CFS symptom severity is known to worsen in response to extreme environmental stressors [12] and to improve with greater perceived stress management skills and stress management intervention [13,14]. Furthermore, early life adversity is highly prevalent in ME [11,15], and has been associated with alterations in neuroendocrine functioning [11] that may worsen key CFS symptoms such as post-exertional malaise [16]. Thus, interventions aiming to decrease patients' stress levels and physical symptoms are of critical importance.

Among treatments available for CFS, behavioral approaches have garnered much attention. Cognitive behavioral therapy (CBT) is among the most widely studied and has shown mixed results for reducing illness burden and improving patients' mental and physical health [17–22]. CBT approaches designed to decrease avoidance of physical activity and to increase physical activity in a graded fashion in patients with chronic fatigue [21], have generated much current interest, though controversy remains concerning the sampling approach and outcome variables used in these studies [23,24]. Whether this form of CBT will ultimately show to be efficacious in patients diagnosed with CFS remains to be seen, though it should be pointed out that reviews of CBT-based interventions used to date in this population do not support increases in physical activity as the underlying mechanism of action. To the extent that stress processes, including neuroimmune regulation, may maintain or exacerbate the CFS symptomology [11,13,16], it is plausible that cognitive behavioral interventions that focus more directly on stressor processing and stress responses may also modulate CFS symptoms.

Another approach, referred to as cognitive behavioral stress management (CBSM) [9,25], which directly targets stress management by teaching cognitive re-restructuring, coping skills, interpersonal skills, relaxation, and other anxiety reduction techniques in a group format, was shown to improve quality of life and decrease perceived stress and symptoms among CFS patients [14]. In that trial, patients who attended sessions benefited from the live group intervention; however, many patients were unable to commit to the requirement of attending these sessions. Since CFS patients' fatigue levels can impede their ability to attend in-person sessions [26], telephone-administered CBSM may be particularly suited to the needs of this population. Telephone-administered individual CBT has been shown to have less attrition than face-to-face CBT, with comparable post-treatment improvements in depressed mood among patients with depression [27]. It is unclear whether these effects would have been comparable in a group format or among patients with a chronic medical condition such as CFS.

To date, no study of patients with CFS has evaluated whether telephone-administered group-based CBSM (T-CBSM) improves patients' stress levels and symptoms relative to live group CBSM (L-CBSM). The present study is a secondary analysis of data from two separate trials, which aims to compare the differential effects of L-CBSM versus T-CBSM on perceived stress and physical symptoms.

2. Method

Data was obtained from two intervention trials that were identical with respect to principal investigator, intervention material, and geographic location. The first trial compared approximately 3 months of L-CBSM to a one-day Live Self-Help psycho-education condition [14]. The second trial compared an approximately 3-month (10 weekly sessions) T-CBSM to 10 weekly sessions of telephone-delivered Health Education. Both studies were approved by the local university Institutional Review Board. In this report, pre-intervention baseline assessment and post-intervention data are compared from participants in the two stress management conditions — T-CBSM and L-CBSM.

2.1. Eligibility

For both trials, written informed consent was obtained from eligible participants. Participants were required to have a physician-determined CFS diagnosis based on the Fukuda et al. [2] definition and be fluent in English. Potential participants were excluded from both studies if they were diagnosed with an illness or were receiving medical treatment that would explain chronic fatigue and/or modulate the immune system (e.g., a diagnosis of Lyme disease, cancer, HIV/AIDS, autoimmune disease, or treatment with renal dialysis or medications such as corticosteroids). Other relevant exclusion criteria across trials include a prior psychiatric hospitalization for a thought disorder or affective disorder, a history of substance or drug abuse within 2 years of their CFS diagnosis, and a history of major psychiatric illness such as schizophrenia.

For the L-CBSM trial, participants were required to be between 18 and 60 years of age and have at least an eighth grade education. For the T-CBSM trial, which involved a larger sample, participants were required to be between 21 and 75 years of age and, due to the nature of the intervention, to have a landline telephone at home. There was not an education requirement for the T-CBSM trial, but potential participants could be excluded if they made four or more errors on the Short Portable Mental Status Questionnaire as this error rate indicates a high likelihood that the individual is of diminished cognitive capabilities.

2.2. Randomization

For the L-CBSM trial, participants were randomized to treatment condition using a 2:1 ratio for L-CBSM to control upon completion of baseline assessment. A 2:1 ratio was used to ensure that there was a sufficient sample size to conduct within group analyses in the experimental condition. For the T-CBSM trial, participants were randomized to treatment condition using a 1:1 ratio upon completion of baseline assessment. Other than these procedural differences, the screening and assessment procedures for the two trials were the same.

2.3. Descriptions of live- and telephone-CBSM interventions

For both the L-CBSM and T-CBSM interventions, each session consisted of a relaxation training exercise and a didactic portion focused on CBSM techniques. Trained clinicians who held a graduate-level mental health degree led the sessions. Relaxation training exercises included diaphragmatic breathing, progressive muscle relaxation, and guided imagery. Cognitive behavioral techniques taught in session included cognitive restructuring, assertiveness training, anger management training, and the use of effective coping strategies.

For the L-CBSM trial, the intervention included 12 weekly in-person group meetings. For the T-CBSM trial, the intervention included 10 weekly group meetings held via telephone. Both intervention arms covered the same topics, but the L-CBSM's two additional sessions provided additional time to review coping and cognitive restructuring skills. Sessions ranged in duration from 90 to 120 min. Participants in the T-CBSM condition received a Cidco Model: CST2100 desk set screen telephone during their participation in the study. Each telephone was programmed with a Computer-Telephone Integration System (CTIS), which allows for the delivery of voice and text information using standard telephone lines, and does not require the addition of a new telephone number. For participants with conflicting schedules and who were not at home during the time of the conference call, a toll-free number was established to give them the flexibility to call from another location and participate in the group sessions.