Sensitivity (MCS). FM is a common rheumatologic ailment characterized by chronic generalized muscle pain, fatigue, and disrupted sleep. FM is present in about 3.4% of American women and .5% of men [5]. It has been found to occur following an acute medical illness, a traumatic injury, or surgery [6]. Proposed criteria for the diagnosis of FM require widespread muscular pain in conjunction with tenderness at a minimum number of tender points [7]. CFS and FM often co-occur [8-10]. It has been estimated that 20–70% of FM patients meet the criteria for CFS, and about 35–75% of patients with CFS also have FM [11-13]. Patients diagnosed with both CFS and FM have been found to be more disabled than those with either condition alone [14], suggesting that co-occurring CFS and FM has an additive effect on disability.

MCS is a commonly diagnosed illness, and is estimated to occur in 6% of adults in California [15]. MCS is defined as a chronic condition with reproducible symptoms involving multiple organ systems; with symptoms that are produced by low levels of exposure to multiple, chemically-unrelated substances and improve or resolve when the chemical agents are removed [16]. Common triggers include pesticides and perfumes [15], causing skin irritation, fatigue, fevers, and neurocognitive dysfunction. Treatment typically involves avoidance of exposure to offending chemicals using such tactics as eliminating carpeting, pesticides and cleaning agents from the home and avoiding other substances experienced as toxic [17]. Chemical avoidance was found to be an effective treatment in 93% of patients [18-20]. MCS is a commonly co-occurring illness with both CFS and FM. In a sample of 33 Gulf War veterans with CFS, 42% had concurrent MCS and 6% had concurrent FM [21]. Estimated rates of CFS comorbidity in persons with MCS range from 30% to 88% [11,22].

Based on the substantial co-occurrence of CFS, MCS, and FM, it is important to examine the functional status of individuals who experience two or more of these diagnoses. In a tertiary care sample, Ciccone and Natelson [23] found that women with all three diagnoses experienced poorer physical functioning, more pain, and more fatigue than those with CFS only. The study by Ciccone and Natelson is the only one to compare all three illnesses, but males were excluded from their sample. Additionally, that study did not examine stress, coping, quality of life or measures that did not rely on self-report data. The present study explored whether individuals with three illnesses are more disabled than those with two or one, and assessed different coping styles in response to their disability. Additionally, the use of in vivo physical measures was used to supplement information from self-report measures in order to employ multiple methods in gaining a more comprehensive understanding of this illness.

Methods

Participant recruitment

Participants were recruited from a variety of sources, including physician referrals. Information about the non-pharmacologic treatment trial study was disseminated to medical colleagues through mailings, phone communication, and invited grand rounds. In addition, study announcements for new participants were placed in local newspapers and recruitment offers were made at local CFS support group meetings. These efforts were continued until the target enrollment numbers were achieved. One hundred and fourteen individuals were recruited. All procedures were approved by the DePaul University Institutional Review Board. Informed consent was given by all participants.

Of the 114 individuals, 46% were referred by physicians, 34% were recruited by media (newspapers, TV, radio, etc.), and 20% stemmed from other sources (e.g., heard about the study from a friend, family member, person in the study, etc.). There were no significant demographic differences for patients recruited from these varying sources. Twenty-four additional individuals who were screened were excluded for various reasons (i.e., lifelong fatigue, less than 4 Fukuda symptoms, Body Mass Index > 45, melancholic depression or bipolar depression, alcohol or substance abuse disorder, autoimmune thyroiditis, cancer, lupus, rheumatoid arthritis). Approaches to reduce attrition included use of letters and telephone reminders of all appointments, flexibility regarding working around vacations and medical and other crises, reimbursement for transportation costs, and participant honoraria.

Initial screening

All participants were required to be at least 18 years of age, not pregnant, able to read and speak English, and considered to be physically capable of attending the scheduled sessions. Patients who were bedridden or used wheelchairs were excluded due to the practical difficulties of making appointments. Referrals to local physicians who treat CFS and to support groups were offered to these individuals. After a consent form was filled out, prospective participants were initially screened by the third author, using a structured questionnaire.

The CFS questionnaire

This screening scale was initially validated by Jason, Ropacki, et al. [24]. This scale is used to collect demographics, health status, medication usage, and symptom data. The CFS Questionnaire was revised, and administered it to three groups: those with CFS, Major Depressive Disorder, and healthy controls [25]. The revised instrument, which was used in the present study, evidences