Hand grip

The hand dynamometer test was administered to measure grip strength in pounds, and is a good measure of loss of work capacity [53]. It is fast, easy to perform, and produces a reliable report that is simple to record [54].

Employment status

This measure of role function consisted of work status (working vs. non-working). Employed included those who were working at least 20 hours per week or in school full-time. Unemployed included those who were retired, working fewer than 20 hours per week, not in school, or part-time student. We also assessed the number that are receiving disability benefits, the number on disability or temporary sick leave, and the number with work limitations due to the illness.

Statistical analyses

Chi-square analyses were conducted between diagnostic groups (i.e., CFS only; CFS-MCS; CFS-FM; CFS-MCS-FM) and all categorical variables including race, gender, work status, marital status, whether or not a participant had children, and presence of psychiatric diagnoses. A series of one-way ANOVAs were performed for continuous variables of age, socioeconomic status, fatigue severity, and disability. To decrease the likelihood of a Type 1 error, Tukey HSD adjustments were made.

Results

Diagnostic status

Participants were categorized into four groups based on their diagnostic status of CFS alone; CFS and MCS (CFS-MCS); CFS and FM (CFS-FM); and CFS, MCS, and FM (CFS-MCS-FM). Of the 114 participants, 50 (43.9%) met criteria for CFS alone, 27 (23.7%) met criteria for CFS-MCS, 18 (15.8%) met criteria for CFS-FM, and 19 (16.7%) met criteria for CFS-MCS-FM.

Sociodemographic characteristics

No significant differences were found across diagnostic categories (CFS alone; CFS-MCS; CFS-FM; and CFS-MCS-FM) for the sociodemographic variables of race, marital status, gender, age, socioeconomic status, or whether or not an individual had children. In regards to demographic characteristics, 16.7 % of the participants were male and 83.3% were female. The average age at baseline was 43.8 years. Regarding ethnicity, 87.7 % were Caucasian, 4.4 % were African-American, 4.4 % were Latino, and 3.5% were Asian-American. As for marital status, 49.1 % were married/living with someone, 33.3 % were single, and 17.6 % were either divorced or separated. In terms of work status, 24.6 % were on disability, 23.7 % were unemployed, 20.2 % were working part-time, 19.3 % were working full-time, 6.1% were retired, 4.4 % were part-time students, .9% were full-time students, and .9 % were working part-time and on disability. In terms of education, 47.4% had earned a standard college degree, 21.8% had a graduate or professional degree, 21.1% had partial college, and 9.7% had a high school/GED degree or less. Regarding psychiatric co-morbidity, 62.3% had a lifetime Axis 1 diagnosis, and 38.6% had a current Axis 1 diagnosis.

Outcome measures

Whether individuals were working or not working was examined across the four groups using χ^2 analyses. There were marginally significant differences across the four groups, χ^2 (3, N = 114) = 7.73, p=.052. The CFS alone group had the highest percentage of working (54%), while the CFS-MCS- FM group had the lowest percentage of working (21.1%).

Outcome measures assessing fatigue severity, aspects of disability, pain, sleep, depression, and coping among the four diagnostic categories are presented in Table 1. An ANOVA was used to compare the four diagnostic groups on the eight scales of the MOS-SF-36. All post hoc tests described below used Tukey HSD. Overall significant differences were found for physical functioning (F (3, 108) = 4.40, $p < .01$), general health (F (3, 107) = 5.83, $p < .001$), social functioning (F (3, 107) = 4.27, $p < .01$), and bodily pain (F (3, 107) = 10.59, $p < .001$). Post hoc tests showed that the CFS-MCS-FM group was significantly more disabled than the CFS alone group on the physical functioning, general health, and bodily pain scales. Individuals with CFS-MCS-FM were also more disabled than individuals with CFS-MCS on the bodily pain scale. The former group revealed more disability on the general health scale than the CFS-FM group. There was a significant difference on the bodily pain scale between the CFS alone group and the CFS- FM group such that individuals with CFS- FM were more disabled by pain than individuals with CFS alone. Individuals with CFS-MCS were significantly more disabled with regards to social functioning than individuals with CFS alone.

An ANOVA was conducted to compare individuals on the Beck Depression Inventory. There was a significant difference in depression scores overall (F (3,107) = 3.20, $p < .05$). Post hoc tests revealed that individuals with CFS-MCS-FM experienced significantly more depression than individuals with CFS alone (see Table 1). However, χ^2 analyses did not yield significant differences in current psychiatric diagnoses (χ^2 (3, N = 114) = 2.71, p=.44) or lifetime psychiatric diagnoses (χ^2 (3, N = 114) = .85, p=.84) across the four groups.

Findings from ANOVAs also showed significant overall differences in sleep quality (F (3,106) = 4.08, $P < .01$), and fatigue severity (F (3,107) = 3.20, $p < .05$). Post hoc analyses revealed that individuals with CFS-MCS-FM experi-