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Understanding Long-Term Outcomes of Chronic Fatigue Syndrome

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Abstract

Objective—This study sought to examine long-term health, symptom, and disability outcomes among patients with chronic fatigue syndrome (CFS) by comparing those diagnosed with CFS 25 years ago with healthy controls.

Method—Of the 25 participants diagnosed with CFS 25 years ago, five self-reported that they maintained a diagnosis of CFS, while 20 reported no longer having a diagnosis. These two groups were compared with healthy controls on outcomes related to functioning and symptom severity.

Results—Those who remitted from CFS showed significantly more impairment on 21 out of 23 outcomes compared to controls. On 17 outcomes, those who remitted had non-significant differences in impairment compared to those who maintained a CFS diagnosis.

Conclusions—Findings from this study suggest that over time many individuals will not maintain a CFS diagnosis but will not return to their premorbid level of functioning.

Keywords

Chronic Fatigue Syndrome; Myalgic Encephalomyelitis; Prognosis; Follow-up Studies; Recovery

Chronic fatigue syndrome (CFS) is a chronic and disabling condition that remains poorly understood. Although an array of aberrant biological systems is implicated in CFS (Kerr et al., 2008; Klimas & O'Brien Koneru, 2007), the precise etiology is currently unclear. Given the dearth of effective treatments available, the prognosis of CFS tends to be poor. In a review of longitudinal CFS studies, Joyce, Hotopf, and Wessely (1997) found that fewer than 10% of adult participants across studies reported returning to premorbid functioning. A more recent review found a median CFS recovery rate of 5%, although there was variability in recovery rates across studies (Cairns & Hotopf, 2005). Based on these findings, it is apparent that although many patients do have some improvement in functioning over time (Cairns & Hotopf, 2005), the vast majority of individuals who develop CFS do not attain a premorbid level of functioning.

Despite efforts to understand the natural history of CFS, and some evidence suggesting longer-term follow-up is associated with better illness outcomes (Joyce et al., 1997), few studies have implemented follow-up periods longer than three years. In a 10-year follow-up of 24 patients with CFS, Jason, Porter, et al. (2011) found that 67% maintained a diagnosis of CFS. The authors also found that only one participant out of the original 24 with CFS was

considered to be in remission (i.e., did not have six or more months of fatigue) at follow-up. With regard to age, findings from Joyce et al.'s (1997) review indicated that older age predicted poorer CFS prognosis in the majority of studies testing this relationship, suggesting the possibility of a better prognosis for children and adolescents who develop the illness. When examining studies specific to young patients suffering from chronic fatigue, they found a recovery rate of at least 54%, depending on sample characteristics and duration of follow-up (Joyce et al., 1997). Yet, in a 13-year follow-up of 35 youths who developed illness suggestive of CFS between 1984 and 1987, Bell, Jordan, and Robinson (2001) found that only 37% reported complete recovery, and 20% remained very ill and disabled. Therefore, even among younger patients and extensive follow-up periods, the majority of patients remain disabled.

Individuals with CFS who have been ill for longer periods of time may utilize more adaptive coping skills (Brown, Brown, & Jason, 2010), thus facilitating the process of illness adaptation (Samson & Siam, 2008). However, illness adaptation may create difficulty in interpreting the meaning of recovery from CFS. For example, in Bell et al.'s (2001) study, 80% of the children and adolescents who became ill considered themselves "well" at follow-up. However, of those 80%, half had ongoing somatic symptoms, while the other half had minimal or no somatic symptoms. Some patients may perceive themselves as feeling well if their symptoms continue but perhaps not as severely as when their illness began. In a study of 10 individuals who were diagnosed with CFS 25 years ago but currently reported being recovered or nearly recovered, Bell and Bell (2010) found that they reported more impairment compared to healthy controls. Although these findings are preliminary, they demonstrate that while some people feel they have recovered from the illness overall, they continue to remain symptomatic years later.

In the course of clinical treatment and primary care, patients often report that they have "recovered" or "nearly recovered" (Bell & Bell, 2010). However, it is likely that they continue to experience symptoms suggestive of CFS. The present study sought to assess the function of individuals who were diagnosed with CFS as adolescents approximately 25 years ago in order to explore the extent of recovery from CFS.

Method

Participants

The sample was comprised of individuals ($n = 25$) who, approximately 25 years ago, were adolescents diagnosed with a CFS-like illness. These 25 adolescents were a convenience sample from a cluster of 60 individuals identified in upstate NY between 1984 and 1987 as having symptoms of an illness consistent with what is currently considered CFS (Bell, Cookfair, Bell, Reese, & Cooper, 1991; Bell et al., 2001). Individuals with an active CFS exclusionary illness according to the Fukuda et al. (1994) criteria were excluded. Because these patients were identified before the original CFS case definition was published (Holmes et al., 1988), somewhat different criteria were used to identify patients in this sample. According to the criteria used to diagnose the sample 25 years ago (Bell & Bell, 1988), participants must have been symptomatic for at least six months. Six of the following eight core symptoms were required: persistent fatigue, neurologic or neuropsychiatric symptoms, headache, muscle pain, abdominal pain, sore throat, lymphatic pain, and joint pain. Finally, laboratory results testing for other illnesses were required to be normal. Although these criteria differ somewhat from the Holmes et al. and the more recent Fukuda et al. (1994) criteria, they closely resemble these widely accepted criteria in the types of symptoms identified, the required duration of symptomatology, and the ruling out of other symptom-inducing illnesses.

A healthy control group ($n = 10$) was also included in this study. The control group was a convenience sample consisting of adults from the same geographic area (Lyndonville, NY) as the CFS group. Healthy controls were recruited from the second author's medical practice. Controls were excluded from the study if they had a past or present serious medical or psychiatric illness. These were individuals who considered themselves well and free of any known illnesses during a routine physical examination at the second author's medical practice.

Materials

Participants were asked a series of sociodemographic questions including gender, race, marital status, work status, and age. Participants self-reported whether they currently had a diagnosis of chronic fatigue syndrome or Myalgic Encephalomyelitis (Yes/No). They reported who diagnosed them (medical doctor, alternative practitioner, or self-diagnosed), and whether they currently have a medical doctor overseeing their fatiguing illness. Finally, they were asked to indicate any other medical illnesses they have that may be causing their fatigue and related symptoms.

The Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) was administered to measure health perceptions on eight domains: Physical Functioning, Role-Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role-Emotional, and Mental Health (Ware & Sherbourne, 1992). SF-36 subscales are on a 0 to 100 scale, with higher scores indicating better functioning in that domain. This instrument has been used extensively in CFS studies (Jason, Brown, et al., 2011). All scales on the SF-36 demonstrated adequate internal consistency and test-retest reliability (Ware & Sherbourne, 1992). One question from the SF-36 General Health subscale was evaluated separately in an effort to provide support for participant's self-reported current diagnosis of CFS. The question states, "In general, would you say your health is:" and answers are on a 5-point scale, with 1 indicating excellent and 5 indicating poor health.

In addition to the sociodemographic questions and the SF-36 disability measure, additional measures were selected to assess impairment in the following domains: sleep, pain, and symptom severity. The Pittsburgh Sleep Quality Index (PSQI) contains 19 self-rated questions about sleep quality (Buysse, Reynolds, Monk, Berman & Kupfer, 1989). The maximum score of 21 indicates severe sleep difficulties. The global PSQI score demonstrated good test-retest reliability ($r = .85$), and good internal consistency ($\alpha = .83$; Buysse et al., 1989). PSQI scores were found to discriminate among patient groups with and without sleep difficulties (Buysse et al., 1989).

The self-rated McGill Pain Questionnaire-Short Form (SF-MPQ) was used to measure sensory and affective domains of pain (Melzack, 1987). It consists of 15 items rated on 0 to 3 scales, with higher scores indicating more severe pain. The two-factor model was validated in a sample of individuals with chronic back pain, and the internal consistency was .77 on both the sensory and affective scales (Wright, Asmundson, & McCreary, 2001). Scores on this short form correlate highly with those on the full version of the MPQ (Melzack, 1987).

Participants were asked to rate the severity of symptoms from 0 (no symptom) to 10 (very severe symptom) using visual analog scales. The following symptoms were rated: fatigue, sore throat, lymph node pain, headache, muscle pain, joint pain, sleep disturbance, memory and cognitive symptoms, and post-exertional malaise. These nine symptoms are the critical CFS symptoms according to the Fukuda et al. (1994) criteria. Each symptom was examined independently, and a total score was computed, ranging from 0 to 90.

The Fisk Fatigue Impact Scale (FIS) was used to measure functional limitations related to fatigue over the past month (Fisk et al., 1994). The FIS contains 40 items scaled from 0 (no impact) to 4 (severe impact), with a minimum possible score of 0, and a maximum score of 160. The FIS has demonstrated excellent internal consistency ($\alpha = .98$; Fisk et al., 1994). In an initial validation study it was found that this measure could correctly identify 80% of individuals presenting with chronic fatigue (Fisk et al., 1994).

Procedure

The second author's Institutional Review Board approved study procedures. All study participants provided informed consent. Participants in the CFS group were seen in the second author's medical practice upon the onset of their symptoms between 1984 and 1987. They were evaluated and diagnosed by the second author according to the Bell and Bell (1988) criteria, and were followed clinically for at least six months. All 60 adolescents evaluated and diagnosed with CFS in the original cluster were considered for participation in the present study. Of the 60 adolescents, 33 were tracked and re-contacted through continued contact with the second author over the 25-year period. Contact information for the remaining 27 was unavailable. Of the 33 contacted, two were excluded because they were diagnosed with active illnesses other than CFS, and six were approached but declined. For participants who no longer resided locally, completion of questionnaires occurred via telephone interview.

As for control participants, they were approached during routine physical examinations at the second author's medical practice. Participants who reported having no significant medical or psychiatric conditions were invited to participate. Of the 10 controls, 80% were female, with an average age of 49.80 years ($SD = 12.79$, range = 27 – 71).

Participants completed the assessment measures at a single time point. Based on self-reported current diagnosis of CFS, the 25 CFS participants were separated into two groups. The first group was referred to as the persist group ($n = 5$), and included those who reported a maintained a diagnosis of CFS. The second group was referred to as the remit group ($n = 20$), and included those who reported no longer having a diagnosis of CFS. Healthy controls comprised a third group ($n = 10$).

Statistical Analyses

The three groups of participants (persist, remit, and controls) were compared on sociodemographic and outcome measures. Due to the small sample size, the assumption of normally distributed continuous dependent variables could not be made. Therefore, non-parametric Independent-Samples Kruskal-Wallis statistics were used when testing continuous dependent variables across groups. For significant omnibus tests, pairwise comparisons were used with Bonferroni correction to identify where significant differences lie. For categorical variables, Fisher's Exact Tests were used to test for significant differences among the groups.

Results

Sociodemographic Variables

All participants were European-American. In terms of gender 68.6% were female. For marital status, 76.5% were married or living with a partner, 17.6% were never married, and 5.8% were divorced or separated. Regarding education, 45.7% had a college or graduate degree, 42.9% had some college, and 11.5% had a high school diploma or less. No significant differences were found between the groups for the three sociodemographic variables discussed above. For work status, 71.4% were working full-time, 11.4% were

working part-time, 11.4% were on disability, and 5.7% were working part-time and on disability. A Fisher's Exact Test revealed a significant difference among the three groups on work status ($p = .003$), with full-time employment at 90% for the control group, 75% for the remit group, and 20% for the persist group. The average age of participants was 39.74 years ($SD = 9.83$). Using a Kruskal-Wallis test, a significant difference across groups was found for age ($p = .007$), with controls being significantly older ($M = 49.80$, $SD = 12.79$) than the persist ($M = 35.80$, $SD = 2.17$) and remit ($M = 35.70$, $SD = 4.46$) groups.

Support for Reported Diagnosis

In order to provide support for participants' self-reported current CFS diagnosis, SF-36 responses of whether they were in poor, fair, good, very good, or excellent health was examined. None of the participants reported excellent health. In supporting their self-reported CFS diagnosis, 95% of participants who reported no longer having an CFS diagnosis reported being in good or very good health. In contrast, 75% of participants who reported still having an CFS diagnosis reported having poor or fair health.

Main Outcomes

Table 1 shows the medians, means, and standard deviations for the main outcomes. All eight SF-36 subscales demonstrated significant differences across groups. For the Physical Functioning subscale ($p < .001$), pairwise comparisons indicated that the persist group had significantly lower scores compared to the remit and control groups. For Role-Physical ($p < .001$), Vitality ($p < .001$), and General Health ($p < .001$), the persist group had significantly poorer functioning than the remit and control groups. The remit group had significantly more impairment on these subscales than the control group. For the Bodily Pain ($p = .001$) and Social Functioning ($p = .001$), the persist and remit groups had significantly poorer functioning than the control group. For the Role-Emotional subscale ($p = .006$), the persist group demonstrated significantly poorer functioning than the control group, and for the Mental Health subscale ($p = .002$), the remit group had significantly poorer functioning than the control group.

Significant differences were observed for the nine symptom severity ratings and the total score. For fatigue ($p < .001$), memory/concentration problems ($p < .001$), sore throat ($p = .004$), lymph node pain ($p = .004$), muscle pain ($p = .001$), joint pain ($p < .001$), headaches ($p = .002$), sleep problems ($p < .001$), and post-exertional malaise ($p = .001$), pairwise comparisons revealed the persist and remit groups had significantly more severe symptoms than the control group. For the total symptom severity scores ($p < .001$), both the persist and remit groups had significantly more symptom severity than the control group, and the persist group had more severe symptoms than the remit group.

Significant differences were found for the SF-MPQ Affective ($p = .001$), Sensory ($p < .001$), and Total scores ($p < .001$), such that the persist and remit groups had significantly more pain than the control group. The persist and remit groups also demonstrated significantly worse sleep quality than the control group on the PSQI ($p < .001$). Finally, an overall significant difference was found for the FIS ($p < .001$), and the persist and remit groups reported significantly more pain than the control group, and the persist group reported more pain than the remit group.

Discussion

This study sought to gain a better understanding of functioning among patients with CFS who have been ill for about 25 years. Across all outcomes, other than the Mental Health subscale of the SF-36, the persist group demonstrated more impairment than the control

group. This finding highlights the sweeping debilitating nature of CFS across a number of domains such as physical and emotional difficulties, specific symptoms, pain, and sleep quality. Moreover, it appears that individuals who maintain a diagnosis of CFS for more than two decades continue to report a high level of disability, as participants in this study scored at least one standard deviation below general population means across all SF-36 subscales except for Mental Health (Jenkinson, Coulter, & Wright, 1993).

Perhaps the most important findings in this study pertain to the remit group, which accounted for 80% of the 25 CFS participants. Given the duration of the follow-up, it would be expected that the remit group would demonstrate comparable functioning to a group of healthy individuals. Yet, this group had significantly more impairment than controls on 21 of the 23 outcomes evaluated. Thus, while people who no longer meet full criteria for CFS would be considered recovered by some standards, these individuals likely do not attain their premorbid level of functioning.

Another important finding with regard to the remit group is that on 17 of the 23 outcomes tested, their scores were not significantly different from those of the persist group, suggesting that the remit group maintained a similarly high level of disability. Directionally, the persist group did evidence poorer functioning than the remit group. Nevertheless, it would be expected that the patterns of differential impairment for the persist and remit groups would be more similar to those of the persist and control groups.

Several limitations can be noted for the current study. First, the data presented are cross-sectional, providing less conclusive evidence about CFS prognosis than longitudinal studies. Second, in using self-reported CFS diagnoses it is possible that some participants remained ill but did not maintain a diagnosis due to a lack of access to healthcare or uncertainty about their diagnosis. Still, we found that 95% of the remit participants also reported being in good or very good health yet had similar levels of functioning as those in the persist group. Third, the case definition used to originally diagnose the sample (Bell & Bell, 1988) differed from later, more accepted case definitions (e.g., Holmes et al., 1988; Fukuda et al., 1994). Recent research suggests the symptom timeframe young patients should, in fact, be shortened to three months to achieve a diagnosis (Jason et al., 2010). Finally, the convenience sampling method used and the small sample size may reduce the external validity of these findings. Moreover, all participants in the study were presently or previously involved in the second author's medical practice, thus the sample may not be representative of the broader patient population.

With regard to statistical analysis, we were unable to control for sociodemographic variables that were significantly different across groups, including age and work status. However, for age, the control group was significantly older than both of the CFS groups, and controls still demonstrated notably better functioning than the CFS groups. The differences found for work status may be another marker of impairment, as the control group had the highest percentage of individuals who were working full-time, regardless of being older.

Conclusion

This study enhances understanding of the extent of recovery from CFS and supports previous preliminary research on this issue (Bell & Bell, 2010). Previous research suggests a better prognosis for youths with CFS (Cairns & Hotopf, 2005). The current study found that individuals who were diagnosed with CFS as adolescents 25 years ago, and now report no longer having a diagnosis, show similar levels of impairment as individuals diagnosed with CFS adolescents 25 years ago and now report maintaining the diagnosis of CFS. Those individuals who considered themselves as no longer impaired by CFS were more disabled

and symptomatic than controls who had never been diagnosed with CFS. Despite no longer maintaining the diagnosis of CFS, this group failed to return to a baseline, normal level of functionality. Future longitudinal research is needed to examine long-term CFS outcomes in larger, representative samples, utilizing a more recent case definition. In subsequent follow-up studies, the inclusion of biological markers implicated in this illness would augment previous self-report studies. Findings from this study underscore the chronicity of adolescent CFS and the need for effective medical treatments.

References

- Bell DS, Bell DE. Definition of recovery in chronic fatigue syndrome. *Journal of LiMe*. 2010; 4:23–27.
- Bell DS, Bell KM. [Letter]. *Annals of Internal Medicine*. 1988; 109:167. [PubMed: 3260086]
- Bell KM, Cookfair D, Bell DS, Reese P, Cooper L. Risk factors associated with chronic fatigue syndrome in a cluster of pediatric cases. *Reviews of Infectious Diseases*. 1991; 13:S32–S38.10.1093/clinids/13.Supplement_1.S32 [PubMed: 2020801]
- Bell DS, Jordan K, Robinson M. Thirteen-year follow-up of children and adolescents with chronic fatigue syndrome. *Pediatrics*. 2001; 107:994–998.10.1542/peds.107.5.994 [PubMed: 11331676]
- Brown MM, Brown AA, Jason LA. Illness duration and coping style in chronic fatigue syndrome. *Psychological Reports*. 2010; 106:383–393.10.2466/PRO.106.2.383-393 [PubMed: 20524538]
- Buyse DJ, Reynolds CF III, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatric Research*. 1989; 28:193–213.10.1016/0165-1781(89)90047-4
- Cairns R, Hotopf M. A systematic review describing the prognosis of chronic fatigue syndrome. *Occupational Medicine*. 2005; 55:20–31.10.1093/occmed/kqi013 [PubMed: 15699087]
- Fisk JD, Ritvo PG, Ross L, Haase DA, Marrie TJ, Schlech WF. Measuring the functional impact of fatigue: Initial validation of the Fatigue Impact Scale. *Clinical Infectious Diseases*. 1994; 18:S79–S83.10.1093/clinids/18.Supplement_1.S79 [PubMed: 8148458]
- Fukuda K, Straus SE, Hickie I, Sharpe MC, Dobbins JG, Komaroff A. The chronic fatigue syndrome: A comprehensive approach to its definition and study. *Annals of Internal Medicine*. 1994; 121:953–959. [PubMed: 7978722]
- Holmes GP, Kaplan JE, Gantz NM, Komaroff AL, Schonberger LB, Straus SE, Brus I. Chronic Fatigue Syndrome: A working case definition. *Annals of Internal Medicine*. 1988; 108:387–389. [PubMed: 2829679]
- Jason LA, Brown M, Evans M, Anderson V, Lerch A, Brown A, Porter N. Measuring substantial reduction in functioning in patients with chronic fatigue syndrome. *Disability & Rehabilitation*. 2011; 33:589–598.10.3109/09638288.2010.503256 [PubMed: 20617920]
- Jason LA, Porter N, Hunnell J, Rademaker AW, Richman JA. CFS prevalence and risk factors over time. *Journal of Health Psychology*. 2011; 16:445–456.10.1177/1359105310383603 [PubMed: 21224330]
- Jason LA, Porter N, Till L, Bell DS, Lapp CW, Rowe K, DeMeirleir K. Examining criteria to diagnose CFS in pediatric samples. *Journal of Behavioral Health & Medicine*. 2010; 1:186–195.
- Jenkinson C, Coulter A, Wright L. Short form 36 (SF36) health survey questionnaire: Normative data for adults of working age. *British Medical Journal*. 1993; 306:1437–1440. [PubMed: 8518639]
- Joyce J, Hotopf M, Wessely S. The prognosis of chronic fatigue and chronic fatigue syndrome. *Quarterly Journal of Medicine*. 1997; 90:223–233.10.1093/qjmed/90.3.223
- Kerr JR, Burke B, Petty R, Gough J, Fear D, Matthey DL, Nutt DJ. Seven genomic subtypes of chronic fatigue syndrome/myalgic encephalomyelitis: A detailed analysis of gene networks and clinical phenotypes. *Journal of Clinical Pathology*. 2008; 61:730–739.10.1136/jcp.2007.053553 [PubMed: 18057078]
- Klimas NG, O'Brien Koneru. Chronic fatigue syndrome: Inflammation, immune function, and neuroendocrine interactions. *Current Rheumatology Reports*. 2007; 9:482–487.10.1007/s11926-007-0078-y [PubMed: 18177602]
- Melzack R. The short-form McGill Pain Questionnaire. *Pain*. 1987; 30:191–197.10.1016/0304-3959(87)91074-8 [PubMed: 3670870]

- Samson A, Siam H. Adapting to major chronic illness: A proposal for a comprehensive task-model approach. *Patient Education and Counseling*. 2008; 70:426–429.10.1016/j.pec.2007.10.018 [PubMed: 18096353]
- Ware JE, Sherbourne CD. The MOS 36-item Short-Form Health Survey (SF-36): Conceptual framework and item selection. *Medical Care*. 1992; 30:473–483. [PubMed: 1593914]
- Wright KD, Asmundson GJG, McCreary DR. Factorial validity of the short-form McGill Pain Questionnaire (SF-MPQ). *European Journal of Pain*. 2001; 5:279–284.10.1053/eujp.2001.0243 [PubMed: 11558983]

Medians, Means, and Standard Deviations for Outcomes with Results from Kruskal-Wallis Tests and Pairwise Comparisons

Table 1

Median Mean (SD)	Persist n = 5	Remit n = 20	Control n = 10	Sig.	Pairwise Comparisons
SF-36 (0–100) ¹					
Physical Functioning	30.00	87.50	100.00	***	a<b, a<c
	34.00 (24.34)	83.10 (18.56)	98.00 (3.50)		
Role-Physical	0.00	87.50	100.00	***	a<b, a<c, b<c
	14.00 (21.90)	71.00 (35.97)	100.00 (0.00)		
Bodily Pain	35.00	72.50	95.00	***	a<c, b<c
	40.60 (19.72)	69.40 (25.69)	94.00 (6.99)		
Vitality	17.00	52.50	81.00	***	a<b, a<c, b<c
	16.40 (12.44)	50.85 (22.51)	83.70 (7.01)		
Social Functioning	42.00	87.00	100.00	***	a<c, b<c
	38.40 (26.30)	73.15 (27.93)	97.70 (4.90)		
Role-Emotional	33.00	100.00	100.00	**	a<c
	33.20 (40.82)	71.55 (39.47)	100.00 (0.00)		
Mental Health	60.00	73.50	88.00	**	b<c
	56.80 (26.14)	70.45 (16.44)	89.10 (5.34)		
General Health	22.00	65.00	88.00	***	a<b, a<c, b<c
	24.40 (18.60)	58.47 (21.92)	89.10 (7.69)		
Symptom Severity (0–10) ²					
Fatigue	8.00	3.00	1.00	***	a>c, b>c
	7.20 (1.10)	4.10 (2.79)	1.10 (0.88)		
Memory/Concentration	6.00	3.00	1.00	***	a>c, b>c
	6.40 (1.14)	3.55 (2.76)	0.80 (0.79)		
Sore Throat	6.00	1.00	0.00	**	a>c, b>c
	5.20 (3.42)	2.35 (2.96)	0.10 (0.32)		
Lymph Node Pain	5.00	1.00	0.00	**	a>c, b>c
	4.80 (3.49)	2.60 (3.10)	0.00 (0.00)		
Muscle Pain	7.00	3.00	0.00	***	a>c, b>c
	6.60 (2.97)	3.60 (2.76)	0.70 (1.06)		

Median Mean (SD)	Persist n = 5	Remit n = 20	Control n = 10	Sig.	Pairwise Comparisons
Joint Pain	7.00	3.50	0.00	***	a>c, b>c
	7.40 (1.67)	4.15 (3.10)	0.40 (0.70)		
Headache	7.00	4.00	0.50	**	a>c, b>c
	6.00 (2.00)	4.20 (2.76)	1.20 (1.48)		
Sleep Problems	9.00	4.50	0.00	***	a>c, b>c
	8.00 (1.41)	4.80 (3.04)	0.90 (1.37)		
Post-Exertional Malaise	7.00	4.00	0.50	***	a>c, b>c
	7.00 (3.08)	4.15 (2.94)	0.90 (1.10)		
Total (0–90) ²	64.00	30.00	6.50	***	a>b, a>c, b>c
	58.20 (11.54)	32.55 (19.38)	6.10 (4.63)		
SF-MPQ ²					
Affective Scale (0–12)	5.00	1.50	0.00	***	a>c, b>c
	4.00 (2.35)	1.94 (2.24)	0.10 (.32)		
Sensory Scale (0–33)	14.00	6.00	0.00	***	a>c, b>c
	13.80 (5.31)	7.39 (6.68)	0.60 (0.97)		
Total (0–45)	20.00	7.50	0.00	***	a>c, b>c
	17.80 (7.43)	9.33 (8.75)	0.70 (1.10)		
PSQI (0–21) ²	12.00	6.00	0.50	***	a>c, b>c
	11.50 (3.42)	9.00 (6.90)	1.50 (2.46)		
FIS (0–160) ²	106.00	26.00	2.50	***	a>b, a>c, b>c
	100.00 (36.70)	36.47 (39.11)	4.00 (5.81)		

Notes:

¹ Higher scores are better;

² Lower scores are better;

** p .01;

*** p .001; for significant pairwise comparisons (p < .05), a = persist group, b = remit group, and c = control group