

Nonpharmacologic Treatment for Fibromyalgia: Patient Education, Cognitive-Behavioral Therapy, Relaxation Techniques, and Complementary and Alternative Medicine

Afton L. Hassett, PsyD^{a,*}, Richard N. Gevirtz, PhD^b

KEYWORDS

- Fibromyalgia • Cognitive-behavioral • Relaxation • Biofeedback
- Complementary and alternative medicine • Treatment

Treating patients who have chronic pain conditions has long held challenges and been rife with pitfalls for health care professionals. Pain is a complex and dynamic phenomenon influenced by genetic, physiologic, cognitive, affective, behavioral, and social factors. Melzack and Wall's gate-control theory revolutionized the understanding of and treatment for chronic pain.¹ Central to this theory is the existence of a gating system at the dorsal horn of the spinal cord that can control pain transmission from the periphery to the somatosensory cortices in the brain. The gating of pain signals is thought to be controlled by peripheral input and the neural centers that govern thoughts, emotions, and behaviors.¹ The gate-control theory explains why certain

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^a Department of Medicine, Division of Rheumatology, University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, 1 Robert Wood Johnson Place, MEB484, New Brunswick, NJ 08903–0019, USA

^b California School of Professional Psychology, Alliant International University, 104 Daley Hall, 10455 Pomerado Road, San Diego, CA 92131, USA

* Corresponding author.

E-mail address: a.hassett@umdnj.edu (A.L. Hassett).

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factors, such as depression and anxiety, worsen the experience of pain, whereas other factors, such as active coping, positive affect, and social support, moderate the experience of pain.²

Factors resulting from living with chronic pain (eg, poor sleep, reduced physical activity, social withdrawal) are the same factors that put one at risk for even greater physical pain. Patients who have fibromyalgia (FM) bear the additional burden of battling long-held misconceptions that FM is a psychiatric illness. As with most chronic pain conditions, comorbid mood and anxiety disorders commonly occur in FM (29% and 27%,³ respectively). Further, a lifetime diagnosis of a major mood disorder has been observed in as many as 74% of patients who have FM.⁴ Thus, psychiatric comorbidity and a lack of objective evidence of disease have led to the belief that FM is a somatization disorder that is psychiatric in nature and a “fashionable” expression of psychologic distress.⁵ In the past decade, however, innovative research inspired by advances in the neuroscience of pain has greatly contributed to our understanding of the pathophysiology of FM. For example, altered pain processing in FM has been demonstrated in functional MRI studies,^{6,7} whereas other studies have identified a deficiency in an important central analgesic system resulting in diminished diffuse noxious inhibitory control.⁸ This knowledge has resulted in new ways of conceptualizing FM and its treatment.

Medications that target modifying pain centrally have shown some efficacy and have been approved by the US Food and Drug Administration (FDA) specifically for the treatment of FM pain. Like most rheumatologic conditions, however, FM is symptomatically heterogeneous, thus rendering a single pharmacologic approach for all patients inadequate. Patients who have FM vary significantly in the type and severity of symptoms experienced, the presence of medical and psychiatric comorbidities, and a range of human factors (eg, genetic, cognitive, behavioral, social); each factor influences the experience of pain and treatment outcomes. It is because of the complexity of pain and heterogeneity of patients who have FM that treating FM using a multidisciplinary approach^{9–12} and considering the particular needs of patient subgroups^{13–15} are frequently recommended.

A multidisciplinary approach has been found to provide superior outcomes when compared with monotherapy.¹⁶ At the heart of this approach is taking into account the unique characteristics of each patient and adding adjunctive nonpharmacologic interventions to evidence-based use of medication. The importance of including exercise in the treatment of FM has been substantiated in several studies, as reviewed by authors of articles elsewhere in this issue. In addition to exercise, patient education, cognitive-behavioral therapy (CBT), relaxation, biofeedback, and other complementary and alternative medicine (CAM) approaches are gaining empiric support and should be considered. Herein, the authors briefly present an overview of these techniques and the evidence for their inclusion as fundamental elements of FM treatment.

EDUCATIONAL APPROACHES

Most experts agree that an educational or psychoeducational treatment component is useful if not necessary when treating FM.¹⁰ Such educational programs target increasing understanding of the complex nature of the interactions among neurobiologic processes, behaviors like sleep or activity levels, and symptoms. These programs have varied foci but usually try to allay the stigma often attached to FM and similar disorders. Goldenberg¹¹ has recently set out recommendations regarding education that seem well founded. He points out that “When educating patients, a core set of information should be provided that includes a detailed discussion of

potential pathophysiological mechanisms in the context of the biopsychological model. The clinician must dispel the notion that the absence of organic disease means that the symptoms are psychogenic".¹¹ Some clinicians have expressed concern that the labeling of FM in itself might worsen symptoms. The one prospective study on this topic found that the diagnosis had no adverse effects, however, and may have actually improved function over 18 months.¹⁷ Thus, careful education seems warranted.

Yet, only limited data are available to support this contention. Beyond several studies that failed to find superiority for other interventions when compared with an educational control group,^{18,19} only two well-controlled trials have been reported. Burckhardt and colleagues²⁰ assigned patients who had FM to an education-only condition, an education plus physical training condition, or a delayed treatment wait list control. Both active treatment groups improved on subjective ratings and reports of physical activity compared with controls. Burckhardt and colleagues²¹ have published a review and treatment guide to the self-management of FM. More recently, Rooks and colleagues²² completed a randomized controlled trial with 207 patients confirmed to have FM who were assigned to one of four groups: (1) an aerobic and flexibility exercise group; (2) a strength training, aerobic, and flexibility exercise group; (3) the Fibromyalgia Self-Help Course; or (4) a combination of the previous three groups. The primary outcome was change in physical function from baseline to completion of the intervention. Secondary outcomes included social and emotional function, symptoms, and self-efficacy. The combination group showed the greatest improvement. The education or self-management group did improve but significantly less than the groups that included physical training. Although more research is clearly needed, it seems that education is most effective in multimodal interventions.

COGNITIVE-BEHAVORIAL THERAPY

CBT combines interventions from cognitive and behavior therapies. Cognitive therapy is based on the premise that modifying maladaptive thoughts results in changes in affect and behavior.²³ Therefore, errors in thinking, such as overgeneralizing, magnifying negatives, minimizing positives, and catastrophizing, are challenged and replaced with more realistic and effective thoughts, thus decreasing emotional distress and self-defeating behavior. More specific to FM, catastrophizing, or the belief that the worst possible outcome is going to occur, has been associated with pain severity,^{24–26} decreased functioning,²⁵ and affective distress.^{25,26} In cognitive therapy, catastrophic thoughts, such as "My pain is awful and there is nothing I can do about it," are reframed to "As bad as my pain might get, there are things I can do to make it at least a little better."

In contrast to cognitive therapy, behavior therapy is rooted in the theory that inner states (thoughts and feelings) are less important than the use of operant behavior change techniques to increase adaptive behavior through positive and negative reinforcement and to extinguish maladaptive behavior by using punishment. In FM, several behavioral techniques are applicable, including behavioral activation (getting patients moving again), graded exercise (initiating exercise and then slowly increasing activities), activity pacing (not overdoing it on days when patients feel good and remaining active on days when they feel bad), reducing pain behaviors (not reinforcing behaviors associated with secondary gain), sleep hygiene (identifying and then changing behaviors known to disrupt sleep), and learning relaxation techniques to lower stress (eg, breathing, imagery, progressive muscle relaxation [PMR]).

Meta-analyses have shown that CBT has significant empiric support for its effectiveness in treating psychiatric illnesses like depression²⁷ and anxiety disorders,^{27,28}

which are common in FM. Thus, addressing psychiatric comorbidity alone provides a good rationale for adding CBT to usual medical treatment for a subgroup of patients who have FM²⁹; however, CBT has also proved to be helpful for several medical conditions, including chronic pain.³⁰ A review of the CBT literature related to FM indicates that a multitude of interventions have been described to be “CBT”—some perhaps inappropriately so. All CBT interventions are not equal, with many including only modest elements of cognitive therapy and, instead, relying heavily on behavioral interventions.

Given the limitation that CBT is not a single discrete intervention akin to a single drug given at a particular dose, there is evidence suggesting that CBT may be an effective adjunctive treatment for some patients who have FM. Two initial open-pilot studies reported improvements in pain intensity³¹ and the ability to control pain,³² in addition to less emotional distress in patients who had FM.³² A larger study with a wait list control (FM: $n = 79$, wait list: $n = 49$) reported improvements in pain, functioning, and emotional distress.³³ Two more studies using educational control groups found positive effects for CBT, but none of the effects were significantly greater than those of the control groups.^{34,35}

Two more recent studies have yielded promising results. Williams and colleagues³⁶ randomly assigned 145 patients who had FM to 4 weeks of group CBT (six sessions) or standard medical care. Twenty-five percent of patients who had FM and were receiving CBT met criteria for being a “treatment responder” (ie, sustained improvement in functional status) compared with 12% of those receiving only standard medical care. Pain scores did not change significantly for either group, but patients considered to be “treatment failures” in the CBT group showed no worsening of symptoms or functional status, unlike the wait list controls, who demonstrated deterioration in energy and physical role functioning. These researchers surmised that although only a subgroup of patients responded to CBT, there could be buffering effects for many more patients.

In the most compelling study to date, Thieme and colleagues³⁷ randomly assigned 125 patients who had FM to CBT ($n = 42$), operant behavior therapy (OBT; $n = 43$), or an attention control group ($n = 40$). OBT consisted of behavioral interventions to reduce pain behaviors, whereas CBT addressed modifying maladaptive thoughts, problem solving, decreasing psychologic stress, pain-coping strategies, and relaxation. These researchers found that when compared with the attention control, CBT and OBT resulted in greater improvement in pain, decreased emotional distress, and improved physical functioning for up to 1 year after treatment.³⁷ Patients in both treatment groups also had fewer physician visits compared with those in the control group. Further, the effect sizes for improvement were large for CBT and OBT; however, for the most part, the differences between the two active treatments were not significant. They did observe that patients in the CBT group demonstrated sustained increases in coping and decreases in catastrophizing, likely contributing to persistent improvements in emotional distress. In fact, patients in the attention control group, which consisted of unstructured group discussion about FM, showed increases in catastrophizing and pain intensity 6 months after treatment.

Effective CBT interventions for FM are likely to target the modification of maladaptive thoughts and expectations, thus improving mood, perceived stress, pain coping, and problem solving, while including behavioral interventions that specifically address ameliorating FM symptoms (eg, sleep hygiene, relaxation training, activity pacing). In FM, the primary goal of CBT treatment is to increase self-management, which includes moving patients toward more adaptive beliefs regarding their ability to cope with and control pain and other symptoms, in addition to taking action to decrease FM

symptoms and stress, resulting in increased functioning. Because the evidence for adding CBT to pharmacologic treatment for FM remains modest, more randomized controlled trials are needed. Further, only subgroups of patients who have FM may be likely to respond to CBT, such as those with greater emotional distress, fewer coping skills, or less social support³⁸ or those who believe at the outset that the treatment is going to be effective.³⁹ Future studies of CBT in FM should carefully explore individual factors associated with response to CBT, in addition to which specific elements of CBT are most highly associated with a positive response to treatment.

RELAXATION TECHNIQUES

There is substantial overlap between CBT and behavioral interventions. Most CBT includes one or more forms of behavioral relaxation, although some of these techniques have evidence for efficacy in the absence of a cognitive therapy component. Relaxation techniques likely to be helpful for FM symptoms include but are not limited to PMR, autogenic training, guided imagery, and meditation. Biofeedback can also be subsumed under this umbrella, but possessing multiple types and having been the recipient of more empiric attention, biofeedback is described at greater length in the following section.

Because psychologic distress and dysfunction of the stress response systems have been observed in subgroups of patients who have FM,⁴⁰ stress management has been a target of treatment. PMR⁴¹ and autogenic training typically serve as the substrate of behavioral intervention for chronic pain.^{42,43} This is true for FM, even though no randomized controlled trials have evaluated PMR in isolation and two trials of autogenic training failed to find superiority for it when compared with other treatment conditions.^{44,45} Despite the lack of direct evidence, clinical experience, and the knowledge that both relaxation techniques are commonly part of CBT for FM,^{36,46} their efficacy is generally accepted.

PMR involves the systematic tightening and relaxing of various muscle groups with the goal of decreasing muscle tension overall, and thus ameliorating anxiety, which was presumed to be linked to muscle tension.⁴¹ In FM, PMR has the added benefit of emphasizing to the patient the difference between muscles that are tense and those that are relaxed, because many patients persistently tense their muscles unknowingly, which can contribute to their pain. One caveat is that patients who have FM should be cautioned not to tense their muscles too tightly during this exercise because this could result in exacerbating pain. In contrast, autogenic training involves repeating such phrases as “My arms are heavy and warm” and visualizing heaviness and warmth in the arms.⁴⁷ The exercise invokes images associated with a relaxed state while moving the focus from one body area to the next. Verifiable warming in the extremities is typically experienced,⁴⁸ which can be helpful for patients who have FM and frequently report cold intolerance and Raynaud’s disease-like symptoms.⁴⁹ Some evidence for including PMR and autogenic training comes from a study by Allen and colleagues⁴⁶ that included patients who had FM among others with similar symptoms. These researchers reported that a manualized CBT protocol that included PMR and autogenic training as central aspects of treatment resulted in decreased symptom severity when compared with augmented medical care.

Autogenic training includes elements of guided imagery, but guided imagery alone that involves engaging all the senses in experiencing pleasant places or circumstances has proved to be helpful for some who have FM. Guided imagery enhances muscle relaxation and can serve as a powerful distraction from pain. In a randomized controlled trial of 55 women who had FM, it was found that those in the guided imagery

arm ($n = 17$) had less pain compared with the control group.⁵⁰ In another study comparing a 6-week guided imagery intervention with treatment as usual, patients who had FM and were receiving guided imagery demonstrated improved functional status and reported a greater sense of self-efficacy for managing pain, although actual pain reports did not change.⁵¹ A recent pilot study reported positive findings for the use of guided imagery specifically for Hispanic patients who have FM, noting significant improvements in symptoms, functioning, and self-efficacy for managing pain.⁵² Finally, in a small open study of female juvenile patients who had FM, a combination of PMR and guided imagery was found to reduce pain and improve sleep in most patients,⁵³ illustrating the potential benefit of using these interventions in combination.

Meditation-based stress reduction can also take several forms, although “mindfulness” meditation is frequently used as an intervention for medical populations. In mindfulness meditation, the patient is directed to focus on one thing, an “anchor,” be it a sound, visualizing a pleasant scene, or breathing. Thoughts are to remain present oriented, and analytic musings are to be avoided in favor of focusing on the meditation anchor. A few studies have examined the efficacy of meditation-based interventions in FM. In an early study of 77 patients who had FM and were enrolled in a meditation-based stress reduction program, Kaplan and colleagues⁵⁴ reported that the scores of all the patients completing the program improved and that 51% of completers had moderate to marked improvement. More recently, a randomized controlled trial comparing women who had FM and were assigned to an 8-week mindfulness meditation program ($n = 51$) with those in a wait list control group ($n = 40$) found that depressive symptoms improved significantly in the meditation group.⁵⁵ Taken together, there is some, albeit inconclusive, evidence that relaxation techniques can be effective adjunctive treatment for FM. Here too, randomized controlled trials using attention, educational, and active comparators are needed.

HEART RATE VARIABILITY BIOFEEDBACK

As has been discussed, it is becoming increasingly evident that FM is a complex systemic disorder with at least some central mediation of symptoms. An additional perspective has emerged that implicates the autonomic nervous system as pivotal to at least some subgroups of patients who have FM.^{56–61} Martínez-Lavin has championed this approach, and with others, he has produced a substantial body of data.^{56–61} There is reasonably good evidence that autonomic nervous system functioning in some patients who have FM can be characterized by elevated sympathetic tone, poor parasympathetic tone, and an abnormal 24-hour autonomic cycle.^{56–61}

Based on this orientation, heart rate variability (HRV) biofeedback has emerged as a potentially useful treatment for FM. Pioneered by Lehrer, Vashillo, and Gevirtz,^{62–65} this approach uses the discoveries made through the centuries by Yoga swamis and other eastern disciplines utilizing slow-breathing techniques coupled with mindful mental states or mantras (see previous section on meditation). Sensors detect beat-to-beat heart rate, HRV parameters, respiration wave forms, and finger temperature. This “feedback” is displayed on a computer monitor situated in front of the seated patient. Patients learn to produce a characteristic heart rate pattern (respiratory sinus arrhythmia) by breathing at a certain rate (eg, six breaths per minute), which, over time, becomes an extremely smooth exaggerated sine wave. HRV biofeedback has produced good results for asthma,⁶⁶ chronic obstructive pulmonary disease,⁶⁷ cardiac rehabilitation,⁶⁸ irritable bowel syndrome,⁶⁹ and hypertension.⁷⁰ Three studies to date have attempted to use HRV biofeedback in the treatment of FM.^{71–73} In a small pilot study, Hassett and colleagues⁷¹ treated 12 women over 10 sessions and found

the HRV biofeedback group to improve in most FM symptom areas (sleep, pain, fatigue, depression, and overall functioning). Importantly, physiologic functions, such as HRV and blood pressure variability, improved over time as well. In a small controlled study with patients who had chronic fatigue, Stevens and colleagues⁷² compared HRV biofeedback combined with sleep hygiene and activity management with a wait list control. The active treatment group showed improvements in fatigue and depression, whereas the controls declined or remained constant with regard to these symptoms. Recently, Hassett and colleagues⁷³ completed a randomized controlled trial comparing HRV biofeedback with a relaxation condition. Although the data have not yet been fully analyzed, preliminary analysis of the first 68 patients indicated that compared with the control, the patients in the HRV group experienced an increase in functioning from baseline to the final session. Although much more research is needed, HRV biofeedback training may offer promise because it targets a known physiologic component of FM and is therefore seen by the patient as an acceptable treatment in the authors' collective experience.

OTHER BIOFEEDBACK APPROACHES

Several studies exist using other biofeedback approaches. Buckelew and colleagues⁷⁴ conducted a randomized controlled trial comparing electromyogram (EMG) biofeedback (n = 29), exercise training (n = 30), combination treatment (biofeedback and exercise, n = 30), and an educational/attention control (n = 30). Compared with the control, they found that patients in the treatment groups showed improvements in self-efficacy for functioning and better tender point index scores. The treatment groups reflected equivalent benefit, although there was a slight deterioration within the control. More recently, an Indian study compared surface EMG biofeedback (n = 15) to a sham feedback condition (n = 15) with patients who had FM and found the active biofeedback to reduce tender points and subjective symptoms and to result in improvements on functioning and the 6-minute walk test.⁷⁵ In addition, several small open trials conducted in Europe found that patients who had FM and were receiving EMG biofeedback reported improvement in pain,^{76,77} sleep disturbance,⁷⁶ and headache⁷⁶ and that they experienced persistent clinical benefit.⁷⁸ Nevertheless, there is one controlled trial in which patients assigned to a fitness program (n = 58) or surface EMG biofeedback-enhanced progressive relaxation protocol (n = 56) failed to show significant improvement compared with controls (n = 29).⁷⁹ One caveat, the lack of effectiveness for the fitness program, is not consistent with most other findings, raising questions about this particular sample. Despite this contrary result and the fact that it is difficult to analyze the methods used in many cases, the generally positive findings across controlled trials and small pilot studies suggest that EMG biofeedback may be a promising treatment for at least some patients who have FM. Finally, a small case study on three patients⁸⁰ used neurofeedback (EEG biofeedback) over 10 sessions and found that all patients reported decreased symptoms. Again, encouraging findings beg for more rigorous follow-up studies.

COMPLEMENTARY AND ALTERNATIVE MEDICINE INTERVENTIONS

Patients who have FM overwhelmingly have sought CAM interventions.⁸¹ Yet, as is the case for so many disorders, little scientific evidence exists for the efficacy of such approaches. Furthermore, deciding which treatments fall into this category is a perilous endeavor; however, a few treatments have been investigated.

Manual Therapies

Massage is a widely used CAM therapy for patients who have FM, and based on patient survey data, it is the intervention with the highest satisfaction levels.⁸¹ Only one study using a comparison or control was located.⁸² Brattberg⁸² compared connective tissue massage (n = 23) with a no-treatment control (n = 25) over 15 treatments. Pain, depression, use of analgesics, and quality of life were improved in the treatment group compared with the controls. Yet, the treatment effects dissipated over a 6-month follow-up period.

Like massage therapy, chiropractic treatments have become a popular modality for patients who have FM.⁸¹ Despite its popularity, few randomized controlled trials have been done with patients who have FM using chiropractic modalities. In a recent review,⁸³ the investigators concluded "...Lastly, other CAM therapies have neither well-designed studies nor positive results and are not currently recommended for FMS treatment (chiropractic care)."

Qigong and T'ai Chi

The term *Qigong* generally describes several traditional Chinese therapies and exercises all believed to facilitate the flow of vital energy or "chi".⁸⁴ Astin and colleagues⁸⁵ conducted a randomized controlled trial in which they assigned 128 patients who had FM to an 8-week intervention that included a mind-body training group (mindfulness meditation and Qigong movement therapy) or an educational support group. Both groups registered statistically significant improvements across time for the Fibromyalgia Impact Questionnaire, total myalgic score, pain, and depression. There was no difference in the rate or magnitude of these changes between the mind-body training group and the education control group, however. Both groups maintained gains at the 6-month follow-up assessment. Mannerkorpi and Arndorw⁸⁶ conducted a similar controlled trial of Qigong movement therapy with similar results. It has been noted that both studies were hindered by the lack of Qigong practice, which is supposed to take place daily and with high intensity to generate sufficient "qi" flow.⁸⁴

In a study using Qigong as a manual therapy,⁸⁴ 10 women who had FM received external Qigong therapy provided by a Chinese master over a 3-week period. Patients were then assessed after treatment and at 3 months. Improvements (with large effect sizes) were observed in pain, functioning, depression, and self-efficacy. No control was used for this pilot, but the magnitude of the symptom reductions warrant further investigation. Finally, one uncontrolled pilot study⁸⁷ evaluated the effect of 6 weeks of biweekly T'ai Chi sessions for 39 women who had FM. Although there was a high drop-out rate, the group had significantly reduced symptoms and increased quality of life. These techniques offer some promise of efficacy, but all need more rigorous assessment to be considered in an evidence-based treatment mix.

Acupuncture

Mayhew and Ernst⁸⁸ recently reviewed the evidence concerning acupuncture and FM. They were able to find five studies that could be reviewed. The quality of the studies was rated as variable; quality of the studies as variable; however, independent of quality, they found mixed results. They asserted that none of the trials included adequate placebo conditions, weakening their scientific value, and concluded that acupuncture treatment was not supported by rigorous clinical trials, and thus could not be recommended for FM. Since this review, one randomized controlled trial was published. In it, 34 women who had FM and were receiving acupuncture plus tricyclic antidepressants and exercise were compared with 24 women receiving tricyclic

antidepressants and exercise only (controls). After 20 sessions of treatment, Targino and colleagues⁸⁹ observed that the women in the acupuncture condition reported significantly decreased levels of pain and improved quality of life compared with the controls. The positive effects persisted for 3 months and then dissipated over the 2-year follow-up period. Finally, a randomized trial of acupuncture for 114 patients who had FM evaluated methodology related to acupuncture (correct needle placement and needle stimulation, which are presumed to be necessary to maximize effects).⁹⁰ Harris and colleagues⁹⁰ reported that although 25% to 35% of patients had a significant decrease in pain, correct needle placement and needle stimulation were not factors, suggesting the possibility of a strong placebo response.

Hydrotherapy

Several well-controlled studies do exist that evaluated the spa type bath therapies that have been used for centuries to ease pain. A recent review⁹¹ found 10 studies of sufficient quality for review. Mean methodologic quality was 4.5 of 9 on the van Tulder scale. Positive outcomes were reported for pain, health status, and tender point count. There is good evidence for the use of hydrotherapy in the management of FM. Most studies were short term, and few used credible placebo conditions. It does seem, however, that the conventional wisdom that warm-water baths relieve pain in the short term is well founded.

Other Complementary and Alternative Medicine Modalities

Many other CAM modalities have been studied, especially various botanicals.⁹² Sarac and Gur⁹³ have recently reviewed evidence for herbal and nutritional supplements, such as St. John's wort, ginseng, valerian, botanical oil, melatonin, magnesium, dehydroepiandrosterone, NADH, S-adenosylmethionine, growth hormone, chlorella pyrenoidosa, 5-hydroxytryptophan, and several dietary supplements. Many of these have shown promising results in early trials, but mixed results are increasingly common as the studies become methodologically more sophisticated. Additional work is needed to be able to know which, if any, of the many touted botanicals may be of lasting help for FM.

SUMMARY

The research, in addition to the clinical experience, indicates that the addition of education and a behavioral or cognitive-behavioral component to FM treatment protocols is warranted. Especially when combined with other modalities, such as exercise, sleep hygiene, or activity pacing, using some form of behavioral intervention seems to add to the efficacy of the treatment. An important caveat applies, however; it is important to avoid any suggestion that the symptoms are "all in your head" when recommending these treatments. It is easy to forget the stigmatizing aspects of any mental health diagnosis in our society. The authors have found that using a physiologically based label (eg, "biofeedback" or "stress management") greatly reduces the perception of the patient that he or she is being "dumped" to a "shrink." A recent informal study of one of the authors (RG) at a major military medical center indicated a strong preference for referrals for biofeedback versus CBT. Once the patient understands the nature of the "mind/body" interaction, further suggestions seem to be accepted without resistance.

For daily clinical practice, the authors suggest using the principles of comprehensive nonpharmacologic pain management represented by the acronym ExPRESS. Ex is for exercise, as described by Jones elsewhere in this issue. P is for psychiatric

comorbidity, because depression and anxiety disorders are common in chronic pain conditions and contribute significantly to pain and disability. R is for regaining function; in FM, this often involves helping patients with activity pacing so that they do not do too much on days when they feel good and do too little on days when they feel bad. E is for education, in which simply informing a patient where on the Internet he or she can find reliable information can be a good start. The authors suggest referring patients to Web sites hosted by the Arthritis Foundation⁹⁴ and the National Fibromyalgia Association.⁹⁵ S is for sleep hygiene, which is necessary for many who have developed counterproductive habits. Finally, S is for stress management, which includes any number of elements, such as CBT, relaxation techniques, hydrotherapy, and gentle exercise to name just a few.

Taking a comprehensive multidisciplinary approach to the treatment of FM can be challenging for most health care professionals not practicing in academic settings. Fortunately, there are innovative tools available to assist them in providing care for FM or to enhance patients' self-management skills. One exceptional tool can be found on the Web.⁹⁶ Here, patients can complete a brief online questionnaire to receive an individualized series of self-help modules, which might consist of education, activity pacing, sleep hygiene, relaxation, and goal setting. Including evidenced-based non-pharmacologic treatment can be greatly facilitated by taking advantage of a resource such as this.

In conclusion, although there is some encouraging evidence for several nonpharmacologic modalities like CBT, more controlled trials are needed, especially those that consider combinations of treatments. Further, intervention studies in FM should also explore individual factors to identify which patient subgroups would be the most likely to respond to which particular treatments.

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