Nurse Practitioners' Education, Awareness, and Therapeutic Approaches for the Management of Fibromyalgia

Linda Hughes ▼ Jean Adair ▼ Feng Feng ▼ Stephanie Maciejewski ▼ Harsha Sharma

BACKGROUND: In the United States, fibromyalgia affects 2%–5% of the adult population, rendering it the most common chronic, widespread pain condition. The American College of Rheumatology has published diagnostic criteria for fibromyalgia, with the latest version in 2010.

PURPOSE: The purpose of this study was to evaluate nurse practitioners' education and awareness of fibromyalgia and to evaluate nurse practitioners' practices for the management of fibromyalgia.

METHODS: Sixty-six nurse practitioners voluntarily completed an online survey regarding their education, diagnosis, and treatment options for patients with fibromyalgia.

RESULTS: The majority of participants reported that they always or occasionally had difficulty diagnosing fibromyalgia and worried about labeling their patients as having fibromyalgia. The most commonly used agents were nonsteroidal anti-inflammatory drugs (70%), serotonin norepinephrine reuptake inhibitors (61%), selective serotonin reuptake inhibitors (51%), and muscle relaxants (44%). Nondrug therapies included exercise (88%), cognitive behavior therapy (58%), and nutrition (56%).

CONCLUSION: Further education is needed for nurse practitioners to increase confidence in diagnosing and managing fibromyalgia.

Background

Fibromyalgia, a widespread disorder of unknown etiology, affects 2%–5% of adults in the United States (6–10 million people), making it the most common chronic, widespread pain condition. Women are approximately nine times more likely to develop fibromyalgia than men (Lawrence et al., 1998). In general medical practice, it is estimated that more than 5% of patients are affected and symptoms generally appear between 20 and 55 years of age (Berger, Dukes, Martin, Edelsberg, & Oster, 2007). The National Fibromyalgia Association estimates that 3%–6% of the world population has fibromyalgia, and the incidence increases with age to the point that 8% of adults older than 80 years meet the American College of Rheumatology (ACR) classification of fibromyalgia. This disorder is seen in families, with symptoms being displayed by children as well as adults (National Fibromyalgia Association, 2009).

Diagnosis and Clinical Presentation

It is estimated that one in five patients with rheumatoid arthritis will have comorbid fibromyalgia (Wolfe & Michaud, 2004). Mental health comorbidities are prevalent as well (Nanji, 2012). The predominant symptom of fibromyalgia is chronic widespread musculoskeletal pain. Individuals with the condition often have increased sensitivity to pain. Stimuli that normally do not cause a pain response may result in pain (allodynia) in this population. Patients with fibromyalgia often present with additional symptoms, including sleep disturbance, fatigue, morning stiffness, paresthesias, headaches, and exercise intolerance. The symptoms of fibromyalgia can be prolonged and debilitating (Berger et al., 2007).

The etiology of fibromyalgia does indicate changes in the serotoninergic, dopaminergic, and catecholaminergic systems of pain transmission and processing with some evidence of environmental and genetic influence (Ablin, Cohen, & Buskila, 2006). Although various tests may be ordered to rule out other possible causes of patients' symptoms, such as rheumatoid arthritis and lupus erythematosus, none is sufficiently sensitive or specific to

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establish a diagnosis of fibromyalgia. In 1990, the ACR published diagnostic criteria for fibromyalgia, namely, widespread pain (both sides of the body, above and below the waist, and in the cervical spine, anterior chest, thoracic spine, or low back), and pain on digital palpation in at least 11 of 18 specified tender point sites (Wolfe et al., 1990). If a patient has typical symptoms of fibromyalgia but does not meet the ACR criteria, a diagnosis of "possible fibromyalgia" is often assigned and a therapeutic trial of standard treatment may be prescribed (see Table 1). In 2010, the ACR updated the diagnostic criteria to include assessment of pain and symptoms over a period of a week, symptoms lasting for more than 3 months, and ruling out any other health problem that would present with the same pain and symptomology. The Widespread Pain Index score consists of the number of painful areas out of 18 identified parts of the body, and the Symptom Severity (SS) score consists of the severity of fatigue, unrefreshed sleep, and cognitive symptoms (Wolfe et al., 2010). The number of somatic symptoms is also included in the evaluation. According to Wolfe et al. (2010), a patient will satisfy the new diagnostic criteria if the Widespread Pain Index is 7 or greater and the SS score is 5 or greater or the Widespread Pain Index has a range from 3 to 6 and the SS score is 9 or greater (Crofford, 2013; Wolfe et al., 2010). According to Arnold, Clauw, Dunegan, and Turk (2012), patients with fibromyalgia reported that it took an average of 2.3 years and assessment by an average of 3.7 physicians before the patient received a diagnosis.

Purpose

Because of the documented prolonged length of time from onset of symptoms to diagnosis as well as the complexity of treatment, the need exists to assess nurse practitioners' knowledge base of fibromyalgia management in the community. Therefore, the purpose of this study was to evaluate nurse practitioners' education and awareness of fibromyalgia and to evaluate their practices for the management of fibromyalgia.

Review of the Literature

Patients with fibromyalgia from a United States health insurance database were compared with healthy controls to determine the clinical characteristics and economic burden of the disease (Goldenberg, Burckhardt, & Crofford, 2004). The mean number of physician office visits was four-fold higher among patients with fibromyalgia over 12 months versus that in the comparison group, 17.8 and 4.3, respectively ($p < .001$). They also had twice as many other outpatient visits (1.8 vs. 0.9) and four times as many emergency department visits (0.4 vs. 0.1; both $p < .001$; Robinson et al., 2003). The mean total healthcare costs over 12 months were three times higher among patients with fibromyalgia. These patients were generally in poorer health and had greater levels of healthcare utilization and costs than those in the comparison group (Robinson et al., 2003).

Table 1. Possible Fibromyalgia Treatment Options

Pharmacological	Nonpharmacological
Tramadol	Heated pools
Amitriptyline	Exercise programs
SNRI	Cognitive behavioral therapy
Pregabalin	Relaxation
Gabapentin	Psychological support

Note. SNRI = serotonin norepinephrine reuptake inhibitor.

Fibromyalgia Treatment

There are various treatment approaches to manage fibromyalgia that have evolved over the last 10 years (Goldenberg et al., 2004). Eleven European countries formed a task force to study these interventions from the European League Against Rheumatism (EULAR). EULAR developed nine recommendations for the management of fibromyalgia (Carville et al., 2008). These recommendations were the following: in general, it is suggested that the treatment should consist of a multidisciplinary plan of pharmacological and nonpharmacological treatments, using an individualized approach. In the nonpharmacological realm, heated pools, exercise programs, cognitive behavioral therapy, relaxation, and psychological support are recommended. In the pharmacological management, tramadol; simple analgesics such a weak opioids; antidepressants such as amitriptyline; and tropisetron, pramipexole, and pregabalin are suggested to reduce the pain. The pharmacological approach was given a stronger recommendation than the nonpharmacological approach in the EULAR study. The suggestions from the American Pain Society (APS) and the Association of Scientific Medical Societies in Germany (AWMF) strongly recommend amitriptyline as well as aerobic exercise, cognitive behavioral therapy, and multicomponent therapy (Burckhardt et al., 2005; Hauser, Thieme & Turk, 2010). Depression can be a strong predictor of a poor outcome in fibromyalgia (de Rooij et al., 2013). Hauser, Wolfe, Tolle, Uceyler, and Sommer (2012) performed a systematic review and meta-analysis of the role of antidepressants in the patient with fibromyalgia. The results were very positive for the use of the tricyclic antidepressant (TCA), amitriptyline, and the serotonin norepinephrine reuptake inhibitors (SNRIs), duloxetine and milnacipran, as first-line options for the treatment of fibromyalgia.

Corticosteroids and strong opioids are not recommended for the treatment of fibromyalgia according to Carville et al. (2008), and nonsteroidal anti-inflammatory drugs (NSAIDs) have also not demonstrated to be effective for fibromyalgia pain relief even though this category of medications is often prescribed for the patient with fibromyalgia (de Miquel et al., 2010). However, the ACR (Singh et al., 2016) suggests that acetaminophen and NSAIDs may treat the discomfort from other comorbidities such as arthritis. Pregabalin, at a dose of 450 mg per day, was found to be promising in the fibromyalgia treatment regimen (Roth, Lankford, Bhadra, Whalen, & Resnick, 2012; Tzellos et al., 2010). In addition to pregabalin, other drugs have been approved for the treatment of fibromyalgia such as gabapentin, which works by blocking the overactivity of the nerve cells

transmitting the pain (ACR, 2010). Some of the same medications that treat the pain may also promote sleep in the patient with fibromyalgia such as cyclobenzaprine, amitriptyline, gabapentin, and pregabalin, but zolpidem or benzodiazepine medications are not recommended for sleep in the patient with fibromyalgia. Other nonpharmacological therapies suggested to ease the symptoms of fibromyalgia are tai chi, yoga, acupuncture, and chiropractic and massage therapy. However, these complementary and alternative therapies warrant further research for patients with fibromyalgia (Crofford, 2013).

Methodology

A descriptive online survey design was used to measure the awareness of practicing nurse practitioners regarding their knowledge and abilities in diagnosing and treating fibromyalgia. The study was institutional review board approved by Nebraska Methodist College. The survey consists of 24 questions, distributed via e-mail to the 242 nurse practitioners who are members of the Nurse Practitioner Organization in a Midwestern state. This particular survey, "Assessment of Provider Awareness and Therapeutic Approaches for the Management of Fibromyalgia" was developed by the Medical Outcomes Specialists from Pfizer, Inc. and has been used by the corporation to evaluate healthcare provider awareness and treatment of patients with fibromyalgia. No validity and reliability studies have been completed on this survey. The completion of the form by the participants indicated informed consent.

The demographic information assessed included primary practice, profession, gender, age, years in practice, and the number of patients with fibromyalgia treated during the previous year. Four questions were listed regarding fibromyalgia education, 11 questions on fibromyalgia awareness, and 5 questions on fibromyalgia treatment. A letter explaining the anonymity of the study accompanied the survey. The data were collected using an online format, downloaded, and analyzed using Excel. The intent of this survey is to use this information to guide future education and studies needed for this population.

Results

There were 66 responders out of 242 members of the Nurse Practitioner State Organization who completed the survey, yielding a response rate of 27%. Sixty-five of the nurse practitioners were female. The average age was 49 (±9.9) years, with the range from 30 to 66 years of age. The average time spent practicing was 10.4 (±6.2) years (range: 1–30 years). Over the last 12 months, the average number of patients with fibromyalgia who were treated by each nurse practitioner was 14 (±46.9) patients (range: 0–350 patients). When asked their area of primary practice, the nurse practitioners responded: 42% Family Practice, 35% Rheumatology, 11% Internal medicine, 9% Mental Health, and 3% other specialties.

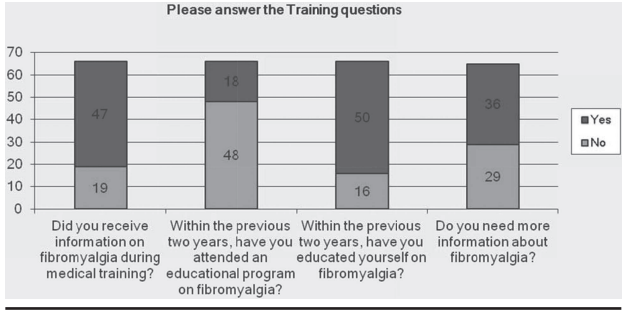

Figure 1. Education questions.

Education

As shown in Figure 1, the majority of nurse practitioners (71%) received information on fibromyalgia during their education. Within the last 2 years most (73%) had not attended an educational program on fibromyalgia and 76% answered that they had educated themselves on fibromyalgia. Fifty-five percent indicated that they needed more information about fibromyalgia.

Fibromyalgia Awareness

With regard to fibromyalgia awareness, 82% of the nurse practitioners believe that fibromyalgia is a distinct clinical condition, with 80% believing that fibromyalgia is both a medical and psychological condition. Only 41% were mostly or completely confident, 39% somewhat confident, and 20% slightly or not confident in recognizing symptoms of fibromyalgia (see Table 2). The majority of the participants felt that fibromyalgia is occasionally (48%) or always (47%) difficult to diagnose, with only 5% feeling that fibromyalgia was rarely difficult to diagnose (see Figure 2).

In response to the possible misdiagnosis of fibromyalgia, 8% stated always, and 88% stated occasionally that fibromyalgia is misdiagnosed. In differentiating fibromyalgia from other conditions with similar symptoms, only 25% of the nurse practitioners were completely or mostly confident, whereas 51% were somewhat confident, 17% slightly confident, and 7% not confident (see Figure 3).

Sixty-two percent of the responders were aware of the ACR Criteria to diagnose fibromyalgia, but unfortunately, the question did not ask whether the criteria were either the 1990 or 2010 criteria. Of those who answered positively that they were aware of the ACR criteria, 72% stated that they use the criteria for diagnosis.

Table 2. Confidence in Recognition of Symptoms of Fibromyalgia

How Confident Are You in Your Ability to Recognize Symptoms of Fibromyalgia?		
Answer Options	Response %	Response Count
Completely	4.9	3
Mostly	36.1	22
Somewhat	39.3	24
Slightly	13.1	8
None	6.6	4
Answered question		**61**

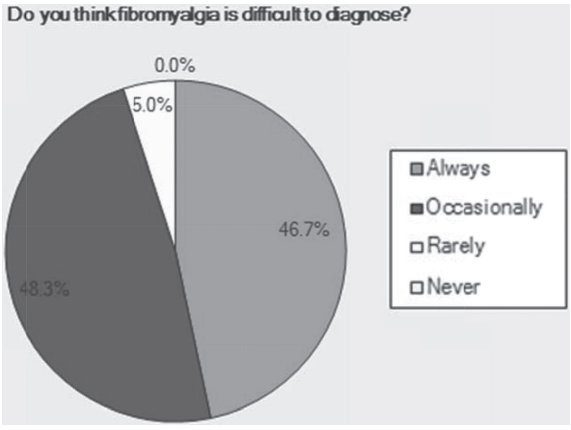

FIGURE 2. Difficulty in diagnosis.

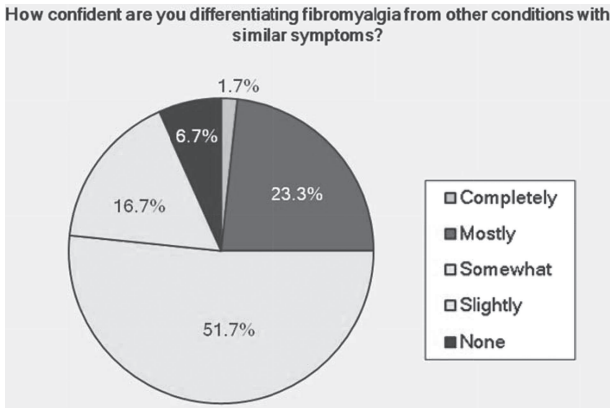

FIGURE 3. Confidence in differentiating fibromyalgia from other conditions.

Widespread chronic muscle pain was the most typical symptom chosen by the nurse practitioners (71%), followed by tenderness (20%), fatigue (7%), and depression (2%; see Figure 4). Of the responders, forty-six percent occasionally and 22% always worry about labeling a patient with fibromyalgia (see Figure 5). The majority of the nurse practitioners (97%) believe that fibromyalgia has a moderate to substantial impact on their patients' quality of life.

There were clear concerns regarding treatment of fibromyalgia. Most of the responders were not totally confident in the treatment of fibromyalgia. Only 3.4% of nurse practitioners felt completely confident to treat patients with fibromyalgia. Forty-four percent of the nurse practitioners were somewhat confident, 12% were slightly confident, and 10% were not at all confident in treating these patients (see Figure 6). The majority of nurse practitioners (69%) prescribe medication to treat fibromyalgia, and 70% use a quantitative pain scale to evaluate the pain. Of those nurse practitioners who prescribe medications for fibromyalgia, 70% prescribe NSAIDs, 61% prescribe SNRIs, 51% prescribe selective serotonin reuptake inhibitors (SSRIs), 44% prescribe muscle relaxants, 33% prescribe TCAs, 26% prescribe anticonvulsants, and 5% prescribe opioids (see Figure 7). In response to nondrug therapy prescribed for fibromyalgia, 88% of the responders prescribe exercise, 58% prescribe cognitive behavior therapy, 56% prescribe nutrition, 53% prescribe physical therapy, 33% prescribe acupuncture, and 23% prescribe alternative therapy such as aqua therapy and massage.

Discussion

The majority of the nurse practitioner responders recognized fibromyalgia as a distinct condition and noted the most common symptoms of pain, tenderness, and fatigue. Most had to self-educate about fibromyalgia and found diagnosis to be difficult. The survey could have revealed more information regarding diagnosing fibromyalgia if it had asked for the specific criteria that the nurse practitioners use, either the ACR 1990 or the 2010 updated criteria. The major difference between the 1990 and the 2010 ACR criteria for fibromyalgia diagnosis is the broader view taken by the more current 2010 criteria. The 2010 ACR criteria include less identified areas of pain and value the patient declaration of fatigue, unrefreshed sleep, and cognitive symptoms as compared with the 1990 criteria that require 11 of 18 tender points being

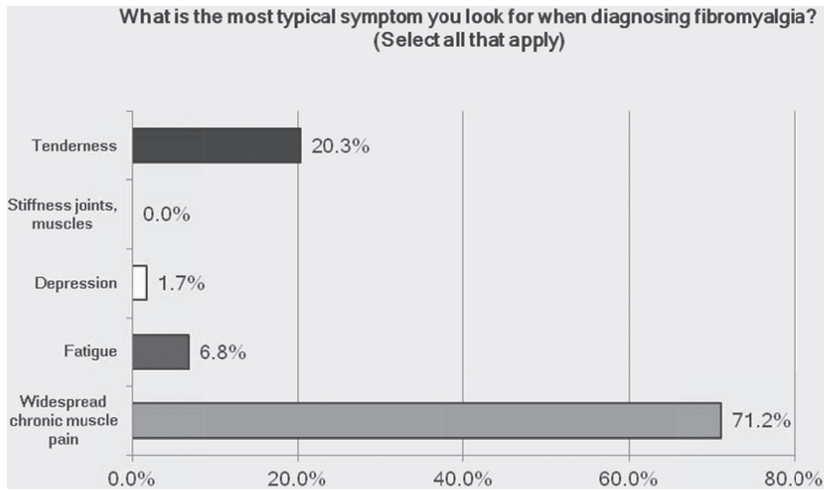

FIGURE 4. Symptoms noted for diagnosis of fibromyalgia.

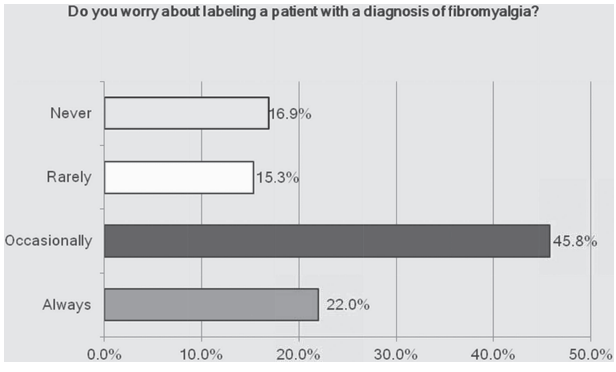

FIGURE 5. Worry about labeling a patient with fibromyalgia.

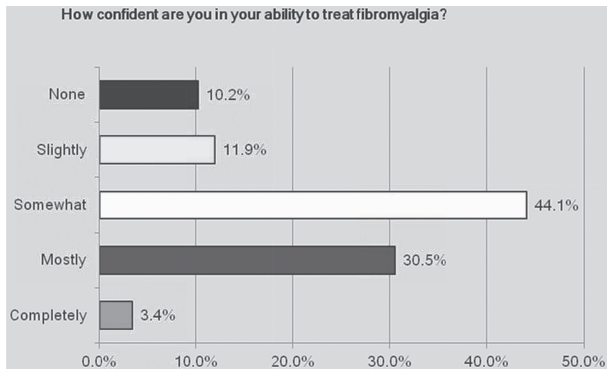

FIGURE 6. Confidence in ability to treat fibromyalgia.

identified without any acknowledgment of other symptoms. This was a limitation in the study.

The majority of the participants in the survey revealed that they were not fully confident in treating fibromyalgia. This is not uncommon, because even the experts seem to disagree on the best practices for treatment of patients with fibromyalgia. There are several guidelines for treatment of fibromyalgia through the APS, the EULAR, and the Association of the Scientific Medical Societies in Germany (Hauser et al., 2010). Both the APS and the AWMF gave the highest recommendation to aerobic exercise, cognitive–behavioral therapy, amitriptyline, and multicomponent therapy. In comparison, EULAR promotes pharmacological treatment such as tramadol, amitriptyline, fluoxetine, duloxetine, milnacipran, moclobemide, pirlindole, tropisetron, pramiprexole, and pregabalin and gives a lesser recommendation to aerobic exercise and cognitive–behavioral therapy. Both EULAR and AWMF do not recommend the use of strong opioids, but APS gave this intervention a weak recommendation.

Nuesch, Hauser, Bernardy, Barth, and Juni (2013) compared the efficacy of pharmacological and nonpharmacological fibromyalgia interventions. This group studied 102 trials and concluded that there were questionable benefits of both types of treatment. They did recommend a combination of pregabalin or SNRIs with multiple nonpharmacological therapies such as aerobic exercise and cognitive behavioral therapy as the most promising for the patient with fibromyalgia. Sixty-one percent of the nurse practitioners in this study prescribed SNRIs, but only 26% prescribed anticonvulsants, the drug category of pregabalin. The majority of the nurse practitioners (88%) did prescribe exercise and 58% prescribed cognitive behavior therapy. The survey nurse practitioners also prescribed nutrition, physical therapy, and acupuncture, not necessarily stated in the recommendations.

Conclusion

The majority of nurse practitioners believed that fibromyalgia was a distinct condition that affects the patient's quality of life. However, 95% had difficulty diagnosing fibromyalgia and more than half worried about labeling their patients as having fibromyalgia. Seventy-six percent of the nurse practitioners reported spending time self-educating and 55% wanted more education. This need for further education is especially evident in the inconsistent pharmacological treatment of the patients with fibromyalgia.

All three guidelines recommend against the use of NSAIDs (as single intervention) or corticosteroids (Hauser et al., 2010, p. 9). Although the guidelines recommend that NSAIDs not be used with patients with fibromyalgia, our study revealed that nearly 70% of the nurse practitioners prescribed this category of medication, which warrants further investigation, given the current emphasis on evidence-based practice. However,

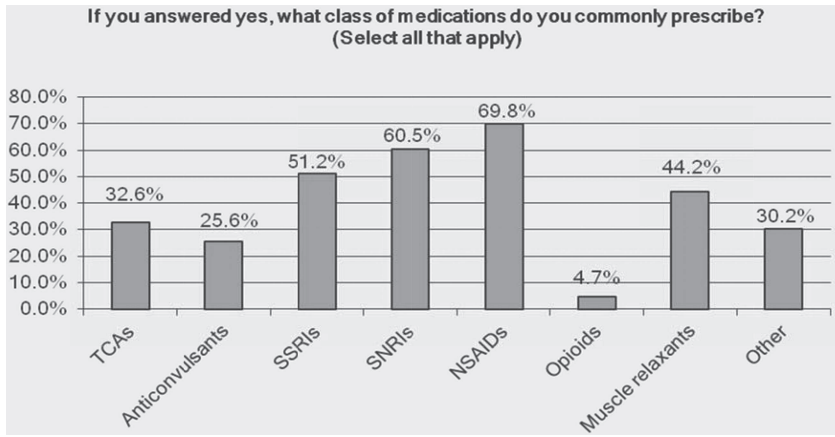

FIGURE 7. Classification of prescribed medications. NSAIDs = nonsteroidal anti-inflammatory drugs; SNRIs = serotonin norepinephrine reuptake inhibitors; SSRIs = selective serotonin reuptake inhibitors; TCAs = tricyclic antidepressants.

approximately one-third of the surveyed nurse practitioners did prescribe TCAs, the category of amitriptyline, recommended by EULAR. Fifty-one percent of the participants did prescribe an SSRI, which is in line with EULAR's recommendation to consider antidepressants in the treatment of fibromyalgia. Although strong opioids are not recommended, approximately 5% of the surveyed nurse practitioners did prescribe opioids. Muscle relaxants were not listed as recommended by any of the fibromyalgia guidelines, yet 44% of the survey respondents commonly prescribed this category of medications, which also warrants further investigation. More than 30% of the nurse practitioners prescribed other medications.

An implication for practice is the identified need for education of nurse practitioners on the 2010 ACR criteria for the diagnosis of fibromyalgia and the recommended pharmacological and nonpharmacological treatment of this condition. Future plans of the research team are to develop online fibromyalgia education and design a future interventional study featuring exercise and sleep protocols for the patient with fibromyalgia. Through continuing education featuring the most promising interventions based on the best current evidence, nurse practitioners could manage the care of the patient with fibromyalgia with more confidence.

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