

# **Fibromyalgia**

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### **Purpose**

The purpose of this course is to define fibromyalgia and explain the symptoms, diagnosis, and treatment.

### **Goal**

Upon completion of this course, one should be able to:

- Define fibromyalgia.
- Explain 3 brain-related changes found with fibromyalgia.
- Describe diagnostic procedures.
- Discuss at least 5 differential diagnoses.
- Describe at least 5 common symptoms.
- Discuss 3 FDA-approved medications.
- Describe at least 3 other medical treatments.
- List and describe at least 4 complementary therapies.

### **Introduction**

When medical authorities have no explanation for symptoms and no identifiable cause, they sometimes blame the patient. This has been the case with fibromyalgia. The pain associated with fibromyalgia has been attributed to stress, overuse, PMS, neuroses, and hypochondria. Some physicians insist that fibromyalgia is a distinct disorder while others continue to dispute this. Despite the debate, 3 to 6 million Americans (80 to 90 percent female) report symptoms consistent with fibromyalgia, and the FDA has approved drug treatments specifically to relieve symptoms of the disorder. Additionally, recent research studies of patients diagnosed with fibromyalgia have found distinctive changes within the central nervous system:

- Decrease in overall gray matter in parts of brain, associated with decrease in dopamine levels.
- Changes in the hippocampal area related to chronic stress. These changes may result in hypersensitivity to pain.

- Hyperperfusion in areas of the brain known to discriminate the intensity of pain and hypoperfusion in area of the brain believe to affect emotional response to pain.

While further research is ongoing, preliminary findings suggest that fibromyalgia may relate to a global dysfunction of the brain in processing pain. Researchers have not been able to identify specific causes for fibromyalgia, but it is currently considered a stress disorder. Some theorize that fibromyalgia may be caused by viral infections although these have not been identified. Depression has been frequently cited as a cause; however, researchers have found that symptoms and functional abnormalities are independent of anxiety or depression status.

## Symptoms

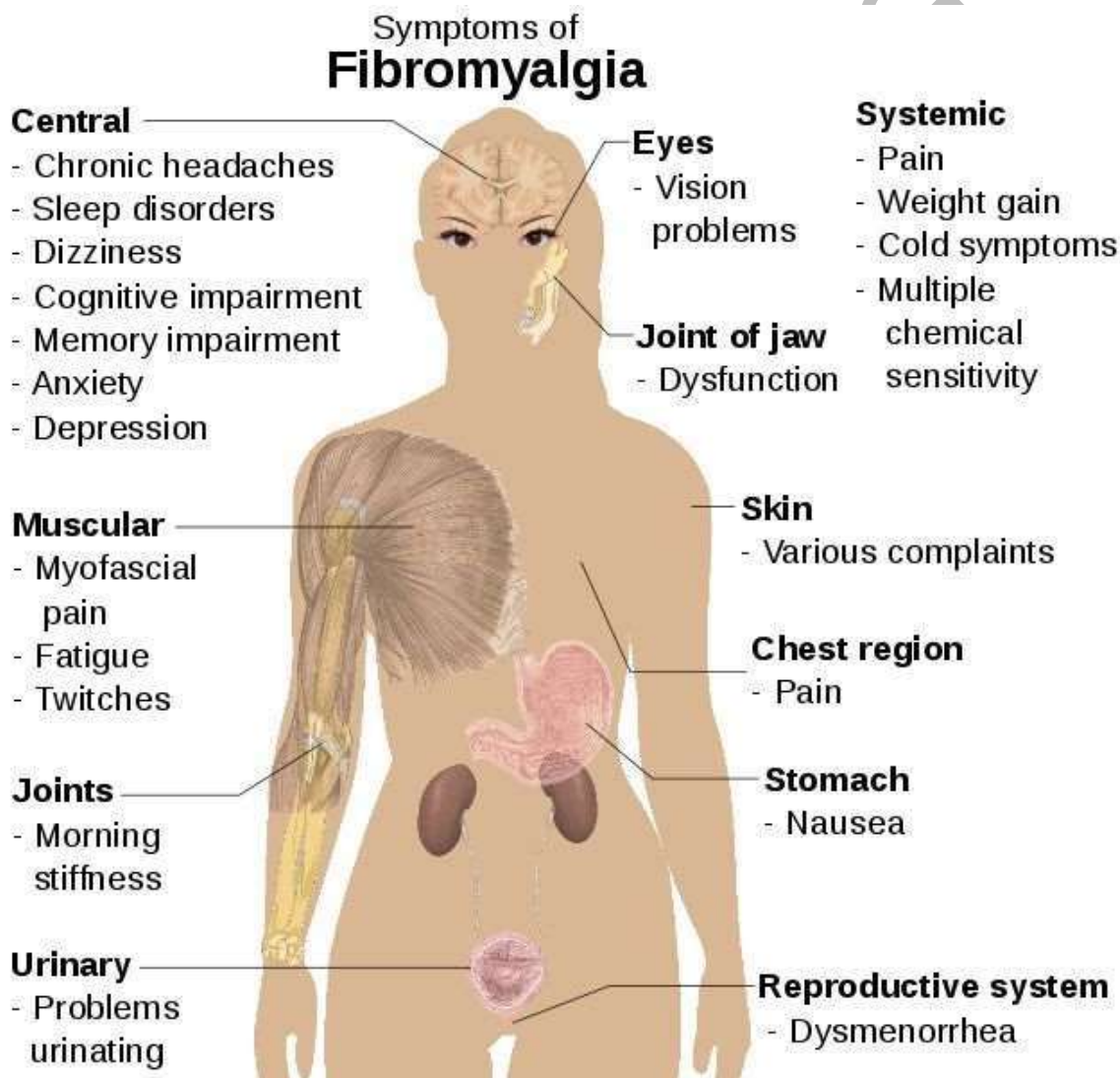
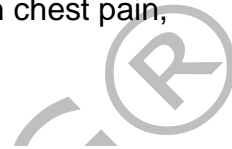
Fibromyalgia—defined as pain and stiffness in the muscles, tendons, and ligaments—is also associated with a wide range of other symptoms, including generalized fatigue, sleep disorders, headaches, nausea, and changes in cognition. Others complain of skin burning. People often complain of painful “knots,” twitching, or cramping pain in muscles. Movement is often restricted or associated with radiating pain. Symptoms are usually worse in the morning on arising. While exercise (moderate intensity) often has pain-relieving properties for most people, it often worsens pain for those with fibromyalgia although failure to exercise at all may worsen pain and stiffness. Symptoms are often similar to those of rheumatoid arthritis with severe joint and muscle pain, but fibromyalgia does not result in inflammation or joint damage. However, the pain and fatigue can be equally debilitating.

Symptoms vary widely and are unpredictable, often fluctuating with periods of more intense pain and periods of remission. While pain is widespread throughout the body, it is often most intense about the neck and shoulders, low back, and hips. The degree of pain about the head, neck, and shoulders often correlates with overall severity of symptoms. Pain may be exacerbated by even minor exertion, resulting in debilitation and reduced activity. These in turn can lead to depression and obesity, further aggravating symptoms. Many patients have difficulty climbing stairs, running, or standing for prolonged periods.

Fatigue is a constant with fibromyalgia and can be incapacitating. Indeed, some researchers believe that chronic fatigue syndrome and fibromyalgia are related disorders. Sleep disorders are common although the pattern that patients exhibit may not relate to typical identifiable sleep disorders, such as obstructive sleep apnea syndrome. Patients experience delay in onset of sleep and have frequent arousals during the night so that they remain tired on awakening and have ongoing fatigue.

“Fibro fog,” difficulty with concentration and memory, is another common symptom with people complaining that they are unable to retain new information to such a degree that it interferes with work and mental tasks.

Another troubling symptom affecting 40 to 70% of patients is irritable bowel syndrome with chronic diarrhea, constipation, bloating, nausea, and abdominal discomfort. Females may experience premenstrual syndrome, dysmenorrhea, dysuria, interstitial cystitis, and vulvodynia. Males may also experience dysuria and prostatic pain. Symptoms may mimic cardiac disorders, with chest pain, palpitations, dyspnea, and peripheral edema.



M. Haggstron, Wikimedia Commons.

Severe migraine-like or tension headaches occur in 50 to 70% of patients with fibromyalgia. This is further aggravated by jaw pain from temporomandibular joint dysfunction, which causes severe pain in the face. However, unlike most TMJ disorders, the problem does not lie with abnormalities of the joint but with the muscles and ligaments of the jaw. Patients may complain of sensitivity to noises, lights, foods, and medications.

The wide range of symptoms has made patient complaints seem less than credible at times, and this has compounded the problems patients face when seeking medical help from sometimes-dubious health practitioners.

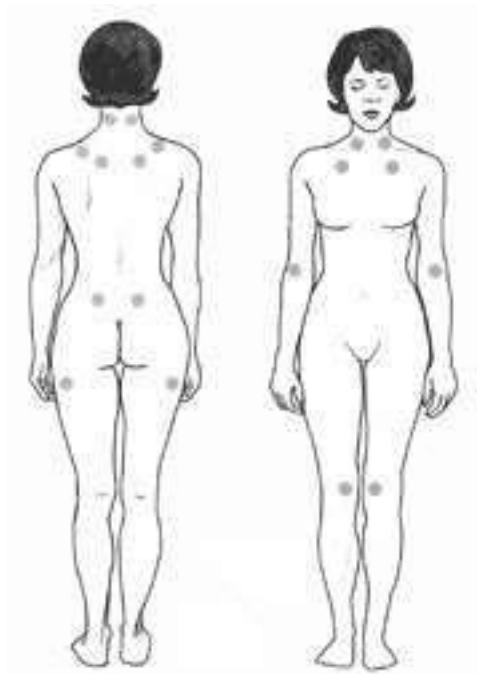
## Diagnosis

Fibromyalgia cannot be diagnosed with laboratory tests, so diagnosis is often an exercise in exclusion. One of the difficulties in diagnosing fibromyalgia is that the symptoms are common to many disorders:

- **Hypothyroidism:** Some people experience a secondary fibromyalgia syndrome, so thyroid function tests should be done to determine if thyroid hormone replacement therapy may alleviate symptoms.
- **Rheumatoid arthritis:** RA may present with similar physical findings but RA is characterized by laboratory elevations of ESR and C-reactive protein, indicating inflammation.
- **Systemic lupus erythematosus:** SLA may also present with similar physical finding but with laboratory abnormalities on ESR and C-reactive protein.
- **Polymyositis:** While there may be some similarities, polymyositis results primarily in muscle weakness rather than muscle pain.
- **Polymyalgia rheumatica:** Pain is more localized with polymyalgia rheumatica, primarily affecting the shoulder and pelvic girdle muscles. It is also associated with anemia and elevation of ESR.
- **Cancer-related osteomalacia:** Conditions that result in hypophosphatemia may cause muscle pain, but pain is more localized and associated with low phosphate levels.
- **Chronic fatigue syndrome:** While many characteristics are similar, CFS is characterized more by constant lethargy and lassitude than by muscle pain.

## Tender point test

The tender point test can help to differentiate fibromyalgia from disorders with similar symptoms. The tender point test focuses on 18 points throughout the body. When pressure is applied to these points, the patient feels pain or tenderness.



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The diagnostic criteria established by the American College of Rheumatology in 1990 require:

- Widespread pain in 4 quadrants for  $\geq 3$  months.
- Moderate pain and tenderness at  $\geq 11$  tender points.

However, these criteria have been questioned because it does not include other symptoms, such as fatigue, forgetfulness, and sleep disorders. Also, pain may fluctuate, so testing at one time may provide different findings than testing at a different time. Males and females also exhibit somewhat different symptoms. Males often report more generalized pain and women more point tenderness.

### Symptom-based test

In June 2020, the American College of Rheumatology supported proposed diagnostic criteria that are not based on the tender point test but is symptom based. Criteria include:

- Widespread pain in 4 quadrants for  $\geq 3$  months.
- **Widespread pain index score:** Checklist lists 19 specific areas in which the patient has felt pain in the prior week. Range: 0-19.
- **Symptom severity score:** Rating of 3 common symptoms (fatigue, waking unrefreshed, and cognitive symptoms) on a scale of 0 to 3 (none to most pervasive). Up to 3 additional points can be added for other symptoms such as depression, numbness, dizziness, or irritable bowel syndrome. Range 0-12 scale.

Diagnosis requires:

- Widespread pain index score of  $\geq 7$  and symptom severity score of  $\geq 5$  OR

- Widespread pain index score of  $\geq 6$  and symptom severity score of  $\geq 9$ . Studies indicate that this new approach to diagnosis is more effective and may identify about 88% of those with fibromyalgia.

## Treatment

The most common treatment for muscle and joint pain is NSAIDs, and this is the treatment that many with fibromyalgia receive, at least initially, but antiinflammatory medications do not relieve symptoms of fibromyalgia because inflammation does not occur. Indeed, they are usually contraindicated because of side effects associated with long-term use. They are, however, sometimes prescribed in combination with other drugs. The FDA first approved medication specifically for fibromyalgia in 2007, and there are now 3 approved drugs with clinical trials ongoing for other treatments. The treatment focus is on antidepressants and anticonvulsants that alter brain chemistry in an effort to control perceptions of pain.

| FDA-approved medical treatments |  |  |
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| Medication                      | Action   | Dosage and side effects  |
| <b>Duloxetine (Cymbalta®)</b>   | Reduces pain and fatigue. Mechanism of action is unclear, but may affect release of neurotransmitters. | <b>Dosage:</b> 30 mg daily initially, increasing to 60 mg daily.<br><br><b>Side effects:</b> Nausea, dry mouth, constipation, lethargy, decreased in appetite, increased perspiration, dizziness, allergic reactions, and weakness. Rebound side effects may occur with discontinuation of medication. |
| <b>Pregabalin (Lyrica®)</b>     | Anticonvulsant is believed to reduce electrical activity associated with overactive nerve impulses.    | <b>Dosage:</b> (Two divided doses) Initial treatment with 150 mg/day increasing to 300 mg daily. Maximum dose is 450mg/d.<br><br><b>Side effects:</b> Allergic reactions, suicidal ideation, panic attacks, peripheral edema, dizziness, and sleepiness.   |

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| <b>Milnacipran HCL (Savella®)</b> | Reduces pain and increases functional ability. Antidepressant is a dual serotonin-norepinephrine reuptake inhibitor, but it increases norepinephrine more than serotonin (norepinephrine selectivity), decreasing the | <b>Dosage:</b> (Two divided doses): Initial dose is 12.5 mg once daily, increasing to 12.5 mg twice daily on 2 and 3 <sup>r</sup> , then 25 mg twice daily for days 4 through 7 and finally 50 mg twice daily. Maximum dose is 100 mg twice daily.<br><br><b>Side effects:</b> Nausea, headache, constipation, dizziness, insomnia, |
|                                   | brain's pain response.  | flushing, excess perspiration, vomiting, palpitations, tachycardia, dry mouth, and hypertension.  |

A number of other medications not specifically FDA-approved for fibromyalgia may be used as well. Because of the disability related to lack of sleep, sleep aids may be one of the first medications prescribed.

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| <b>Sleep aids</b>                          | Ambien®, Lunesta®, clonazepam, trazodone may help patients sleep and relieve the chronic fatigue.  |
| <b>Analgesics</b>                          | Acetaminophen (Tylenol®) rather than NSAID may provide relief for mild to moderate pain. Tramadol (Ultram®) or other opioids may be necessary for more severe pain.                |
| <b>Tricyclic antidepressants and SSRIs</b> | Antidepressants not specifically approved for fibromyalgia, such as amitriptyline and fluoxetine (Prozac®) are sometimes used singly or in combination to relieve symptoms.        |
| <b>Anticonvulsants</b>                     | Gabapentin (Neurontin®) may reduce pain. It is not yet FDA approved for fibromyalgia but studies indicate that it is effective in reducing pain, fatigue, and disruption of sleep. |

In addition to medications, a number of other types of therapies are used to help relieve pain and other symptoms. In some cases, the use of complementary therapy may reduce the need for medications and improve quality of life.

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| <b>Acupuncture</b> | Acupuncture, insertion of needles into acupuncture points, is believed to stimulate the release of endorphins and neurotransmitters, increasing tolerance to pain. Acupuncture treatments may be used in any part of the body, and treatment may reduce pain for various periods of time, weeks in some people. |
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| <b>Yoga</b>  | <ul style="list-style-type: none"> <li>• <b>Hatha yoga</b>, the slow flowing type most commonly practiced in the United States, involves a focus on posture (gentle stretching), breathing exercises, and meditation to reduce stress.</li> <li>• <b>Viniyoga</b> is an even slower more individualized form of yoga popular with older adults and those with fibromyalgia. It focuses on increasing strength, coordination, and balance</li> <li>• Taking a warm bath prior to exercises may reduce stiffness.</li> <li>• Results are best if done consistently, 5 or 10 minutes daily rather than for longer periods less frequently.</li> </ul> |
| <b>Tai Chi</b>   | Tai chi (yang style) combines slow exercises, breathing, and meditation and according to a recent study appears to provide better relief of pain than stretching exercises. Patients participating in the study had classes 2 times weekly and used a DVD to practice 20 minutes daily. Other types of Tai Chi have not been studied in conjunction with fibromyalgia.   |
| <b>Physical therapy</b>                                  | Gentle stretching and applications of cold and heat to muscles may help to reduce pain.  |
| <b>Transcutaneous electrical nerve stimulator (TENS)</b> | TENS used in combination with analgesia may relieve pain in some. TENS suppresses pain signals and increases production of endorphins, which provide natural pain relief. However, TENS provides only local relief, and since pain is often widespread, TENS has limited application. Suprapubic TENS may be effective to treat bladder pain.  |
| <b>Cognitive behavioral therapy</b>                      | CBT helps patients to develop strategies to cope with and reduce pain. This may include developing plans for behavioral strategies to use when pain occurs.  |

## Summary

Fibromyalgia--Fibromyalgia—pain and stiffness in the muscles, tendons, and ligaments—is also associated with a wide range of other symptoms, including generalized and constant fatigue, sleep disorders, headaches, nausea, and changes in cognition. Symptoms vary widely and may fluctuate in intensity. There are no laboratory tests to diagnose fibromyalgia, so diagnosis begins by excluding diseases with similar symptoms. The tender point test has been used to identify those with fibromyalgia, but a symptom-based test that includes a widespread pain index and symptom severity score has been proposed. The FDA has approved 3 drugs specifically to treat fibromyalgia: duloxetine (Cymbalta®), pregabalin (Lyrica®), and milnacipran (Savella®). However other drugs, such as sleep aids, antidepressants, and anticonvulsants are sometimes



used. Complementary therapies are often used to help patients cope with symptoms and to reduce pain: acupuncture, yoga, Tai Chi, physical therapy, TENS, and CBT.

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