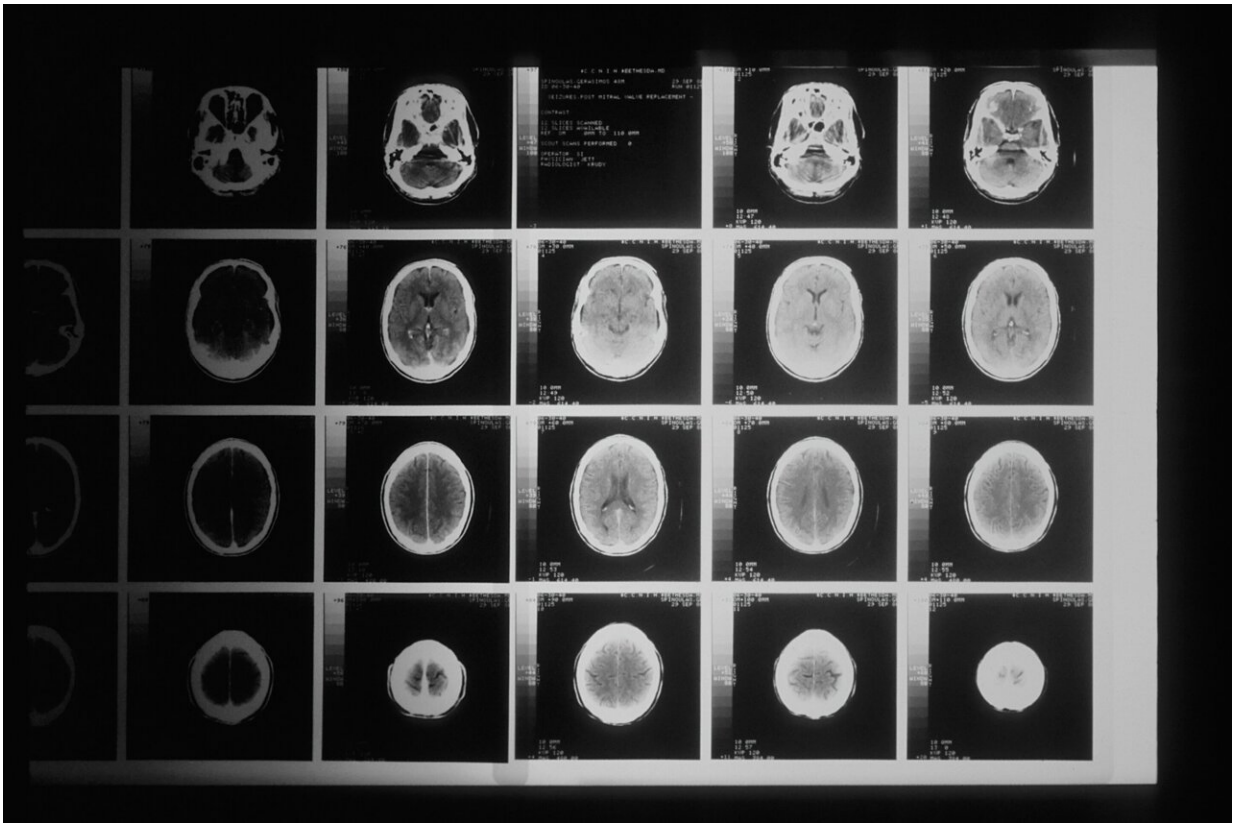


# First study to analyze brain changes associated with juvenile fibromyalgia

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Juvenile fibromyalgia is a syndrome characterized by a chronic pain affecting the whole body. It also causes fatigue as well as sleep and mood disorders. It affects children and adolescents—mainly

girls—worldwide and it appears during a critical period of the brain development. Analyzing the brain changes that occur in the first stages of juvenile fibromyalgia could help to better understand the pathophysiology of this syndrome, which had not been approached from this perspective to date.

A study published in the journal *Arthritis & Rheumatology* characterizes for the first time the alterations in the gray matter volume in adolescents affected by juvenile [fibromyalgia](#), and it analyzes its functional and clinical relevance. The study contributes to identifying potential risk factors that will help testing the efficiency of different treatments to reverse these [brain](#) alterations. The new research is led by the postdoctoral researcher Maria Suñol and the lecturer Marina López Solà, from the research group Pain and Emotion Neuroscience Laboratory of the Faculty of Medicine and Health Sciences and the Institute of Neurosciences (UBNeuro) of the University of Barcelona.

The study, which applies several neurophysiology study techniques, counted on the participation of 34 [adolescent girls](#) affected by the pathology and a control group of 38 healthy adolescents. The new research has been carried out in collaboration with the professors Susmita Kashikar-Zuck and Robert Coghill, members of the Cincinnati Children's Hospital (United States).

## **Juvenile fibromyalgia: Brain, self-perception and emotions**

The study reveals that the adolescents with juvenile fibromyalgia have less gray matter in the anterior-midcingulate cortex (MCC) region, a brain region which is decisive for pain processing. This feature could be related to the excessive engagement of brain circuits that process pain and it points out to the existence of a reorganization with these neuronal

circuits.

The most affected patients by the pathology—and with more symptoms—also show an increase of volume in the frontal regions of the brain that is related to the creation of narratives about oneself and the emotional processing and regulation.

This increase in volume could reflect a certain immaturity in the process of the development of frontal circuits involved with emotion and language. "These findings strengthen the need to consider therapeutic strategies aimed at modulating the activity in these circuits in order to reverse the harmful narratives patients might feel about themselves," notes Maria Suñol, first author of the study.

It also states that some brain alterations associated with related to juvenile fibromyalgia coincide with those identified in adult women with fibromyalgia. "This suggests that both syndromes share part of the pathophysiology," notes the lecturer López Solà. "Therefore, it is important to promote the early and guided study of the pathology in adolescents in order to prevent the transition from juvenile to adult fibromyalgia."

**More information:** Maria Suñol et al, Brain Structural Changes during Juvenile Fibromyalgia: Relationships with Pain, Fatigue and Functional Disability, *Arthritis & Rheumatology* (2022). [DOI: 10.1002/art.42073](https://doi.org/10.1002/art.42073)

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