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Relationship Between Fibromyalgia and Giftedness-Review Article

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Abstract

This study explores the relationship between giftedness and fibromyalgia, investigating the possibility that gifted individuals suffer from fibromyalgia, a condition often associated with cognitive deficits. Fibromyalgia is characterized by widespread musculoskeletal pain, fatigue, sleep disturbances, and cognitive difficulties, including memory and concentration problems. These symptoms often begin after stressful events or develop gradually without a specific trigger. The study examines the symptom overlap between fibromyalgia and traits associated with giftedness, such as high emotional intensity and self-consciousness. Additionally, the research investigates how "fibro fog", a common cognitive difficulty in fibromyalgia, may impact the ability to focus and make judgments, which are typical characteristics of gifted individuals. The findings indicate that although fibromyalgia and giftedness are distinct conditions, there is a significant intersection where gifted individuals may present with symptoms of fibromyalgia, including cognitive deficits that compromise their performance. Therefore, it is crucial to recognize and address these symptoms in educational and therapeutic support programs to maximize the potential of these individuals.

Keywords: *Giftedness; Fibromyalgia; Cognitive Deficit; Musculoskeletal Pain; Fatigue; Sleep Problems; Fibro Fog*

Introduction

Giftedness is characterized by advanced abilities or potential in one or more specific areas, while fibromyalgia is a disorder characterized by widespread musculoskeletal pain, fatigue, and cognitive deficits, such as memory and concentration problems. Although they are distinct conditions, there is a possibility that gifted individuals may suffer from fibromyalgia. To avoid generalizations, the study is not stating that gifted individuals have fibromyalgia, but rather we are raising the possibility that this could happen. In fact, in a survey in the Gifted debate group with more than 500 gifted individuals, where 100 responded to the survey, we found no reported cases. Research into this intersection aims to reveal the complexity of the conditions and how distinct characteristics of giftedness can act as neuroprotective factors.

Possibility of gifted people with fibromyalgia: Research suggests that gifted individuals have high emotional intensity and self-awareness, traits that, while advantageous in many situations, can make these individuals more susceptible to intense psychological

stresses. These stresses are known triggers of fibromyalgia, suggesting that the gifted population is not immune to developing this condition. Studies have shown that higher cognitive characteristics can coexist with fibromyalgia symptoms, such as "fibro fog", making it difficult to identify and appropriately manage these overlapping conditions.

Giftedness as a neuroprotective factor: Giftedness may act as a neuroprotective factor due to the heightened cognitive abilities and greater psychological resilience often observed in gifted individuals. These characteristics may compensate, in part, for the cognitive deficits associated with fibromyalgia. However, this compensation is not absolute, and gifted individuals may still experience significant difficulties in their daily lives. The ability to think critically and solve problems may help mitigate some of the negative impacts of fibromyalgia, but it does not eliminate the need for appropriate therapeutic interventions.

Distinctive trait conditions: The distinctive traits of giftedness and fibromyalgia may in some cases compensate for each other, but in others they may exacerbate the challenges faced by the individual. High emotional intensity and self-awareness may both aggravate fibromyalgia symptoms by increasing the perception of pain and discomfort, and act as tools for better management of the condition through greater understanding and active pursuit of effective treatments. The coexistence of these conditions highlights the need for personalized approaches to therapeutic management that consider both the unique strengths and challenges of each gifted individual with fibromyalgia.

What is fibromyalgia?

Fibromyalgia is a disorder characterized by widespread musculoskeletal pain accompanied by fatigue, sleep problems, memory problems, and mood changes. Researchers believe that fibromyalgia amplifies pain sensations by affecting the way the brain and spinal cord process pain and non-pain signals.

Symptoms often begin after an event, such as physical trauma, surgery, infection, or significant psychological stress. In other cases, symptoms build up gradually over time, without a specific triggering event.

Women are more likely to develop fibromyalgia than men. Many people with fibromyalgia also have tension headaches, temporomandibular joint (TMJ) disorders, irritable bowel syndrome, anxiety, and depression. Although there is no cure for fibromyalgia, a variety of medications can help control symptoms. Exercise, relaxation techniques, and stress reduction measures may also be beneficial.

Symptoms

The main symptoms of fibromyalgia include:

- **Widespread pain:** The pain associated with fibromyalgia is often described as a constant, dull ache that lasts for at least three months. To be considered widespread, the pain must occur on both sides of the body, above and below the waist.
- **Fatigue:** People with fibromyalgia often wake up tired, even if they report having slept for long periods. Sleep is often interrupted by pain, and many patients with fibromyalgia have other sleep disorders, such as restless legs syndrome and sleep apnea.
- **Cognitive difficulties:** A symptom commonly referred to as "fibro fog" affects the ability to focus, pay attention and concentrate on mental tasks.

Fibromyalgia often coexists with other conditions, such as:

- Irritable bowel syndrome
- Chronic fatigue syndrome
- Migraine and other types of headaches

- Interstitial cystitis or painful bladder syndrome
- Temporomandibular joint (TMJ) disorders
- Anxiety
- Depression
- Postural tachycardia syndrome.

What is giftedness?

Gifted individuals are defined as those who demonstrate advanced ability or potential in one or more specific areas when compared to others of the same age, experience, or environment. These gifted individuals excel in their ability to think, reason, and judge, making it necessary for them to receive special educational services and support to fully develop their potential and talents.

Characteristics of gifted children: Gifted people come from all different racial, ethnic, and economic backgrounds. While no two gifted people are alike, many share common characteristics and traits, such as:

- Advanced thinking and understanding relative to peers.
- Emotional intensity from a young age.
- High level of self-awareness.
- Highly developed curiosity.
- Excellent memory.

The majority of the population has an IQ between 85 and 115. The average, or average IQ, is 100. A gifted person 's IQ generally falls into the following ranges:

- High Skills: 115 to 130
- Moderately gifted: 130 to 145
- Profoundly gifted: 145 to 160.

These IQ ranges are based on a normal distribution curve. However, different IQ tests can influence this range, as some have cutoffs that max out at 145. Additionally, different professionals who work with gifted students may use other terms, such as "exceptionally" gifted. While universal consensus on these ranges and labels may not be reached, it is understood that students who deviate from the average IQ of 100 require special educational accommodations to meet their needs.

Is giftedness a disability?

Giftedness is not considered a disability, although some gifted students may also have learning disabilities such as dyslexia, ADHD, or autism spectrum disorder. These students are known as twice-exceptional students (also known as 2e students). Identifying these students often requires a professional who can assess and identify both areas of exceptionality, which may mask each other, making identification more difficult. Because of their unique abilities and characteristics, 2e students require a special combination of educational programs and support.

Does giftedness disappear?

Giftedness doesn't go away. However, a gifted child's gifts and talents may be suppressed or go unnoticed. This can be caused by misidentification or "masking", when a child hides certain aspects of his or her giftedness that can prevent it from being identified. Here are some characteristics of giftedness that can make identification difficult:

- **Asynchronous development:** Refers to uneven development. In the case of gifted children, many perform at a high level in one or more areas, but may function at a much lower level socially and emotionally. Gifted children may act immaturely for their abilities.
- **Lack of study skills:** Gifted children often struggle later in school because they tend to have poor study skills. They may get through elementary and middle school without having to study much, but by the time they enter high school and college, they may not be prepared to handle the rigors of college-level courses.
- **Underachievement:** Gifted students may show great academic promise, but still perform below what is expected based on their ability. There are many causes for underachievement in gifted students. Some of the reasons include:

    - Special needs or double exceptionality
    - Lack of motivation
    - Psychological issues such as perfectionism and anxiety
    - Depression.

Intervention is often necessary to reverse underperformance in gifted individuals. It is important to work with the gifted individual to discover exactly what is causing the underperformance. If the individual is not being adequately challenged, it is critical to focus on cultivating his or her strengths and talents.

Giftedness and fibromyalgia: A possible relationship?

Fibromyalgia, a complex syndrome characterized by chronic widespread pain and fatigue, has been associated with several risk factors, including genetic predisposition, physical and emotional trauma, and infections. Recently, researchers have investigated the possible relationship between intellectual giftedness and fibromyalgia, suggesting that gifted individuals may be more vulnerable to this condition.

Intensity and vulnerability: Gifted individuals often exhibit heightened emotional intensity and a high level of self-awareness, characteristics that, although beneficial in many contexts, may increase susceptibility to chronic stress. According to [1], emotional intensity and difficulty regulating emotions may be associated with an increased risk for developing fibromyalgia.

Cognitive impact of fibromyalgia: In addition to pain and fatigue, fibromyalgia can also affect cognitive function, resulting in difficulties with concentration, memory and attention, a phenomenon known as “fibro fog” or fibro fog (this fog is related to the phenomenon that causes the loss of the ability to maintain attention and store facts in memory. This occurs because painful thoughts are so intense that it makes it impossible for the patient to perform their functions normally). In gifted individuals, these symptoms may be mistakenly attributed to their high intellectual capacity, making proper diagnosis and treatment difficult [6] demonstrated that patients with fibromyalgia present cognitive deficits in memory and concentration tests, regardless of their intellectual level. These findings reinforce the importance of considering fibromyalgia as a potential differential diagnosis in gifted individuals who present with cognitive complaints.

Need for further research: Although current evidence suggests a possible relationship between giftedness and fibromyalgia, more research is needed to elucidate the mechanisms underlying this association. Longitudinal and neuropsychological studies may contribute to the understanding of the interaction between genetic, environmental, and psychological factors in the development of fibromyalgia in gifted individuals.

Giftedness as a potential neuroprotective factor in fibromyalgia: A literature review

Giftedness, characterized by superior cognitive abilities, has been investigated as a possible protective factor against the deleterious effects of fibromyalgia on cognitive functioning. Gifted individuals demonstrate greater psychological resilience and adaptive capacity, attributes that may modulate the impacts of chronic pain and psychosocial stress associated with fibromyalgia [6].

Neuropsychological studies have explored the relationship between giftedness and cognitive resilience in fibromyalgia [3] identified correlations between performance on working memory tasks and variations in brain morphology in patients with fibromyalgia, suggesting that brain structure may influence the capacity for cognitive compensation.

Although giftedness may confer some protection against the cognitive deficits of fibromyalgia, such as those observed by [5] in tests of memory and concentration, it is crucial to emphasize that this protection is not absolute. Chronic pain and stress can compromise cognitive functioning even in individuals with high intellectual capacity, negatively impacting their quality of life.

The complexity of coexistence: Giftedness and fibromyalgia

The interaction between giftedness and fibromyalgia presents an intriguing paradox: distinctive features of giftedness, such as emotional intensification and self-awareness, may both amplify the challenges of fibromyalgia and facilitate coping with the condition.

Intensification of pain experience: The emotional sensitivity and self-awareness present in gifted individuals may, in some cases, exacerbate the perception of pain and physical discomfort associated with fibromyalgia. Studies demonstrate that central sensitization, a fundamental neurobiological mechanism in the pathophysiology of fibromyalgia, can be modulated by emotional and cognitive factors [1]. Thus, the emotional intensification inherent to giftedness may potentiate the pain experience, making the management of fibromyalgia even more challenging.

Self-awareness as a coping tool: On the other hand, self-awareness and reflective capacity, characteristics frequently observed in gifted individuals, can be valuable resources in coping with fibromyalgia. A deeper understanding of one 's own condition and its impacts can lead to an active search for more effective treatments and coping strategies. Cognitive-Behavioral Therapy (CBT), for example, has been shown to be effective in modulating pain perception and improving quality of life in patients with fibromyalgia [2], and the self-analysis capacity of gifted individuals can enhance the results of this intervention.

The need for personalized therapeutic approaches: The coexistence of giftedness and fibromyalgia demands individualized and multidisciplinary therapeutic approaches. It is essential to consider not only the clinical deficits and symptoms, but also the cognitive and emotional strengths of each individual. Detailed neuropsychological assessments, combined with psychotherapeutic interventions and pain management therapies, are crucial to optimize treatment and promote the overall well-being of patients [6].

Result and Discussion

Comparative analysis of brain regions affected by fibromyalgia and developed in individuals with high abilities/giftedness

Fibromyalgia (FM) is a complex clinical syndrome characterized by chronic widespread musculoskeletal pain, fatigue and cognitive impairments. Neuroscientific studies have demonstrated structural and functional alterations in several brain regions of individuals with FM, including areas involved in pain perception, cognitive processing and emotional regulation. At the same time, individuals with high abilities/giftedness (HA/GD) exhibit atypical neurobiological development, with emphasis on brain regions associated with cognition, creativity and information processing. This article proposes a comparative analysis of the brain regions affected by FM and those that present differentiated development in individuals with HA/ GD, elucidating the interface between these conditions and their clinical and therapeutic implications.

Neurobiological changes in fibromyalgia: FM is associated with changes in brain morphology and connectivity in several regions. Neuroimaging studies reveal reduced gray matter density in areas such as the parahippocampal gyri, right anterior and posterior cingulate cortex, which are crucial for pain modulation and cognitive-emotional processing [1]. Furthermore, there is a decrease in functional connectivity between the thalamus and motor areas, as well as between the insula and primary sensorimotor areas [2]. The medial frontal region, ventrolateral prefrontal cortex and anterior cingulate cortex also show alterations in gray matter density in patients with FM [4].

These areas are critical for pain regulation, attention, working memory and executive functions, suggesting a significant impact of FM on cognitive and emotional capacities.

Atypical neurobiological development in individuals with high abilities/giftedness: Individuals with HA/GD present differentiated neurobiological development, with greater gray matter density and functional connectivity in regions such as the prefrontal cortex, anterior cingulate cortex, and areas associated with executive and cognitive processing [3]. Increased connectivity in neural networks associated with abstract thinking, problem solving, and inhibitory control is also a distinctive feature in individuals with HA/GD [5].

Interface between fibromyalgia and high abilities/giftedness

Implications and perspectives: The overlap between brain regions affected by FM and those with differential development in individuals with HA/GD suggests a complex interface between these conditions. The reduction in gray matter density in the anterior cingulate cortex in patients with FM may compromise the capacity for pain modulation and emotional regulation, abilities that are generally enhanced in individuals with HA/GD. Altered functional connectivity between the thalamus and prefrontal cortex in patients with FM may interfere with executive functions, attention and working memory, which are often enhanced in individuals with HA/ DS. This suggests that although HA/DS may confer some cognitive resilience, neurobiological changes induced by FM may modulate or even suppress these benefits.

Analysis of brain regions affected by FM and those with differentiated development in individuals with AH/DS reveals details that may influence the clinical manifestation and therapeutic management of these conditions. Understanding the neurobiology is fundamental for the development of personalized interventions that consider both the deficits and the cognitive and emotional potential of these individuals.

Clinical and therapeutic implications: Identifying the interface between FM and HA/DS may aid in the development of personalized and effective therapeutic interventions. For example, neuromodulation strategies, such as transcranial magnetic stimulation (TMS), could be targeted to brain regions with functional alterations in FM patients, aiming to restore neuronal connectivity and activity. Cognitive behavioral therapies (CBT) can also be tailored to the specific needs of individuals with FM and HA/GS, focusing on developing pain coping skills, emotional regulation, and optimizing executive functions. CBT can help identify and modify dysfunctional thought and behavior patterns, promoting adaptation and well-being. Interventions that explore the cognitive and creative potential of individuals with AH/G may also be beneficial in the context of FM. Participation in stimulating and challenging activities, such as music, visual arts and reasoning games, can promote neuroplasticity, engagement and quality of life.

Conclusion

This literature review explores the complex intersection between giftedness and fibromyalgia, highlighting the neurobiological and clinical implications of this correlation. Accumulating evidence indicates that although giftedness confers significant cognitive and emotional advantages, it does not exempt individuals from the debilitating impacts of fibromyalgia. On the contrary, the advanced cognitive and emotional processing characteristics of gifted individuals may paradoxically amplify pain perception and exacerbate the cognitive deficits associated with fibromyalgia.

Detailed examination of the brain regions involved in both conditions reveals substantial overlap in areas critical for cognition, emotion, and pain perception, such as the anterior cingulate cortex, prefrontal cortex, and parahippocampal regions. These areas, which are highly developed in gifted individuals, undergo significant alterations in morphology and connectivity in patients with fibromyalgia, resulting in impaired pain modulation and cognitive processes. Neuroimaging studies show reductions in gray matter density and alterations in functional connectivity, highlighting the complexity of the interaction between giftedness and fibromyalgia.

The reviewed data suggest that therapeutic interventions should be highly personalized, taking into account the unique cognitive and emotional capacities of gifted individuals with fibromyalgia. Multidisciplinary approaches that integrate detailed neuropsychological assessments and pain management strategies are crucial to optimize clinical outcomes and improve the quality of life of these patients. The clinical relevance of this review lies in the need to raise awareness about the coexistence of giftedness and fibromyalgia, promoting a therapeutic approach that not only treats the physical symptoms but also considers the cognitive and emotional challenges imposed by this combination of conditions. Understanding these complex dynamics is essential to develop more effective intervention strategies and improve the clinical management of patients presenting these unique neurobiological and psychosocial characteristics.

Conflicts of Interest

Nil.

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