

# The Complexities of Temporomandibular Joint Function: An Overview of Epidemiology and Contributing Factors

Ezgi Onal\*

Department of Orthopedics Surgery, Copenhagen University, Copenhagen, Denmark

## Perspective

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**\*For Correspondence:**

Dr. Ezgi Onal, Department of

Orthopedics Surgery, Copenhagen

University, Copenhagen, Denmark

**E-mail:** ezgi.onal@monash.dk

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### DESCRIPTION

The Temporomandibular Joint (TMJ) is a complex joint that plays a vital role in jaw movement and function. Despite its importance, the exact mechanisms of TMJ function and dysfunction are not yet fully understood. This perspective aims to provide an overview of current understanding of TMJ function and dysfunction, and to highlight areas for future research.

### Anatomy and physiology of the TMJ

The TMJ is a synovial joint that is formed by the mandibular condyle and the temporal bone. The joint is surrounded by a fibrous capsule that is lined with synovial membrane. The TMJ is also supported by a network of ligaments, muscles, and nerves. The primary muscles involved in TMJ function are the temporalis, masseter, and medial and lateral pterygoids. These muscles are responsible for jaw movement and biting force. The TMJ also has a unique disc that separates the mandibular condyle from the temporal bone. This disc helps to distribute forces and reduce friction within the joint.

### TMJ dysfunction

TMJ dysfunction can occur due to a variety of factors, including trauma, arthritis, and malocclusion. The most common form of TMJ dysfunction is Temporomandibular Joint Disorder (TMD). TMD is a group of disorders that affect the muscles and/or joints of the TMJ. Symptoms of TMD can include pain, clicking or popping sounds, and limited jaw movement. Diagnosis of TMD can be difficult, as there is no definitive test for the disorder <sup>[1-3]</sup>. Diagnosis is typically based on a combination of patient history, physical examination, and imaging studies. Treatment of TMD can vary depending on the underlying cause, but may include medications, physical therapy, and splint therapy.

Despite significant research efforts, there is still much to learn about TMJ function and dysfunction.

One area of interest is the role of genetics in TMD. Studies have shown that certain genes may be associated with an increased risk of developing TMD. Understanding the genetic basis of TMD could lead to more personalized and effective treatments. Another area of interest is the relationship between TMD and sleep disorders. Studies have shown that patients with TMD are more likely to experience sleep disturbances, such as sleep apnea. Further research is needed to understand the mechanisms underlying this relationship, and to develop targeted treatments for both TMD and sleep disorders.

TMJ pathology affects a significant portion of the population, with 3%-7% seeking treatment for pain and dysfunction. The prevalence of symptoms and signs varies greatly and may be related to different clinical criteria used. Radiographic changes corresponding to osteoarthritis are seen in 14%-44% of the population, and age is a risk factor with some individual characteristics. TMD is more common in females, but there is no clear relationship between occlusal alterations and TMJ disease <sup>[4-6]</sup>. Only disharmony between centric relation and maximum intercuspitation, and unilateral cross bite, has shown the potential to predict TMJ disease. Overall, TMD is a complex disorder with various contributing factors. It is crucial to understand the epidemiology of TMD to develop effective prevention and treatment strategies.

### CONCLUSION

The Temporomandibular Joint is a complex joint that plays a vital role in jaw movement and function. Despite significant research efforts, there is still much to learn about TMJ function and dysfunction. Future research directions include investigating the genetic basis of TMD and the relationship between TMD and sleep disorders. A better understanding of TMJ function and dysfunction could lead to more effective treatments and improved quality of life for patients with these disorders.

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