



# INTERNATIONAL MEDICAL REVIEW ON DOWN'S SYNDROME

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ORIGINAL

## Temporomandibular joint evaluation in subjects with Down syndrome

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### KEYWORDS

Down syndrome;  
Temporomandibular  
joint;  
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disorders

### Abstract

**Subjects:** With Down syndrome present hypotonia, stomatognathic alteration system, such as small oral cavity, macroglossia and malocclusions, may suggest a higher risk for temporomandibular disorders.

**Aim:** To evaluate the temporomandibular joint of Down syndrome subjects with, to verify temporomandibular disorders prevalence and possible postural associations.

**Material and methods:** Forty subjects was included in this study. Temporomandibular joint was evaluated across functional physical screening and questions about daily habits. After, the subjects was submitted a postural evaluation through photographic registers in front of a crisscross space.

**Results:** Most subjects was presented temporomandibular disorders (77.5%). The most common signs and symptoms found were bite alterations and parafunctional habits. Moreover, parafunctional habits and pain were positively correlated to temporomandibular disorder in these subjects ( $p=0.038$  and  $p=0.016$  respectively). Postural alterations were not significant correlation with temporomandibular disorder.

**Conclusions:** To verified a high prevalence of temporomandibular disorder and important relationship between parafunctional habits and pain in subjects with Down syndrome.

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## PALABRAS CLAVE

Síndrome de Down;  
Articulación  
temporomandibular;  
Desórdenes  
temporomandibulares

**Resumen** Los sujetos con síndrome de Down (SD), presentan hipotonía, disfunciones en el sistema stomatognático, como cavidad oral disminuida, macroglosia y maloclusiones, aumentando la prevalencia de desórdenes temporomandibulares.

**Objetivo:** Evaluar la articulación temporomandibular de sujetos con SD, a fin de verificar la prevalencia de desórdenes temporomandibulares y posibles relaciones con la postura.

**Métodos:** Cuarenta individuos con SD se incluyeron en este estudio. La articulación temporomandibular fue evaluada a través de examen físico funcional y preguntas sobre los hábitos diarios de cada participante. Posteriormente, los sujetos fueron fotografiados delante de un posturógrafo y sus posturas evaluadas.

**Resultados:** La mayoría de los participantes presentó disfunción de la articulación temporomandibular (77,5%). Los signos y síntomas más frecuentes fueron alteración en el tipo de mordida y hábitos parafuncionales, con una correlación significativa con la presencia de disfunción temporomandibular ( $p=0.038$ ). Todos los participantes que manifestaban dolor presentaban disfunción articular ( $p=0.016$ ). Las alteraciones posturales encontradas no tuvieron correlación con la presencia de disfunción temporomandibular.

**Conclusión:** Se observó una alta prevalencia de disfunción temporomandibular en los individuos evaluados y una importante relación entre la disfunción y la presencia de hábitos parafuncionales y dolor en sujetos con SD.

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## Introduction

Down syndrome (DS) is a genetic alteration caused by a trisomy of the chromosome 21.<sup>1-3</sup> Individuals with DS present specific motor disorders, such as generalized muscular hypotonia and hypermobility joint. Moreover, DS subjects also present stomatognathic modifications system, such as small oral cavity and relative macroglossia mainly due to incorrect anterior tongue position and malocclusions.<sup>2</sup> These characteristics may suggest a higher risk for temporomandibular disorders (TMD).<sup>1</sup>

TMD is characterized by functional and structural changes of stomatognathic system, the most frequent symptoms being temporomandibular joint (TMJ) and/or masticatory muscles pain (among others), and parafunctional habits such as bruxism,<sup>4</sup> which is a common condition in subjects with DS.<sup>1,2</sup> Interestingly, postural alterations are also frequently described in individuals with TMD, mainly related to the head, cervical spine, shoulder posture.<sup>1,5</sup>

The early diagnosis of postural alterations or TMJ could help on the treatment or TMD prevention. However, to date studies which studied the relationship among DS morphophysiological changes and the prevalence of TMD in this population are still incipient. Therefore, the aim of this study was to evaluate the TMJ of DS subjects with, to verify TMD prevalence and possible postural associations.

## Methods

### Participants

Forty participants were recruited for a DS specialized institution, localized in Porto Alegre-RS, Brazil. The inclusion criteria for this study were: (1) aged between 10 and 60 years old; (2) ability to stand up for at least 60 min; and (3)

a responsible companion during the measurements. Participants with neurological disorders that could interfere in the evaluations were excluded.

In order to make a homogeneous sample, the subjects were divided by age in three different groups: (1) aged between 10 and 19 years old, (2) aged between 20 and 29 years old and, (3) aged  $\geq 30$  years.

After a meeting to explain the study objectives and methods, a written informed consent was signed by a responsible. The study was approved by the research ethics committee of the Instituto Porto Alegre da Igreja Metodista - IPA.

### Assessments

The assessments were performed in a single day. Prior to the initial examination, a full historical examination was performed to identify: (1) past medical history of subjects, (2) episodes of TMJ pain, (3) parafunctional habits such as bruxism, continuous gum chewing, and nail biting, or chewing on writing implements (pencils, pens).

After, a physical therapist and a dentist realized a TMJ functional physical screening. The dentition, chewing, type of bite, tongue, craniofacial profile, TMJ range of motion, opening and closing mouth (with or without deviation), pain through muscle palpation in the relevant muscles to TMJ and presence of TMJ bias were examined according to previous literature.<sup>6</sup> The participants were also submitted a postural evaluation through photographic registers for posterior analysis by a physical therapist. The patients were positioned in front of a crisscross space according to Souza et al.<sup>7</sup>

### Statistical analyses

The Statistical Package for Social Sciences for Windows (SPSS, version 17.0, Chicago, IL, USA) was used for data

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