

Pediatric dental care in patients with down syndrome: A literature review



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ABSTRACT

Down syndrome (DS) is a genetic condition caused by trisomy 21, and is the most prevalent congenital mental anomaly. This syndrome encompasses a wide variety of mental, behavioral, and physical changes, including oral modifications that require specialized attention from dentists. Dental

treatment for patients with Down Syndrome seeks to eliminate or control the specific difficulties these individuals face, highlighting the importance of an early approach to provide the best possible outcomes. This study aims to conduct a literature review of behavioral management techniques in pediatric dental care for children with Down syndrome. There is a need for the dental surgeon to adopt a specific conduct during the dental treatment of these patients, considering their particularities. The controversy among the authors regarding the rate of caries lesions in patients with Down syndrome highlights the complexity of this issue. The study also highlights the importance of family involvement throughout dental treatment and emphasizes the need for dental surgeons to be prepared to deal with the various characteristics and individual needs of each child with Down syndrome. In summary, the research highlights the relevance of a holistic and individualized approach to ensure the quality of dental care for these patients.

Keywords: Down syndrome, Dentistry, Behavioral management, Caries.

1 INTRODUCTION

Down syndrome (DS) is a condition that affects all systems of the body, having been first described by Langdon Down in 1866. This syndrome is the most prevalent congenital anomaly, incorporating mental and behavioral alterations, and physical and oral malformations (TONG, 2022; NASER *et al.* 2023). Individuals with DS are considered special, requiring additional instruction and appropriate approaches throughout their lives. It is not a disease, but a condition, not curable, but rather the control of the resulting conditions (NASER *et al.*, 2023; SATTOJU, 2023).

In dentistry, the care of patients with DS requires an individualized approach, recognizing their special characteristics, such as occlusal changes, muscle tone, dryness of the oral mucosa, bruxism, macroglossia, among others (DORIGUETTO *et al.*, 2019). These patients face challenges in maintaining adequate oral hygiene, contributing to the high incidence of caries and gingivitis, although there is some controversy in studies on dental caries rates in individuals with D (DÍAZ-QUEVEDO *et*



al., 2021). Children's behavior during dental treatment, such as fear, lack of cooperation, crying, and body movements, represents a significant concern for pediatric dentists (KACZOROWSKA *et al.*, 2019).

Therefore, dental surgeons, especially pediatric dentists, need to be proficient in behavioral management techniques, prepared to deal with situations that may generate anxiety, fear, or other adverse behaviors presented by these patients (CARRADA *et al.*, 2020). Patient non-cooperation is often associated with factors such as past trauma, anxiety, and physiological conditions. It is up to the dental professional to be able to deal with and understand the particularities of each child, recognizing that each one has its own history, customs, and challenges (CARRADA *et al.*, 2020; STENSSON *et al.*, 2021). In the context of special needs, such as Down syndrome, it is even more essential to perform a detailed anamnesis and seek multidisciplinary cooperation. It is imperative that parents or guardians prepare the child for dental treatment, using positive tools that minimize uncertainty regarding procedures (DESCAMPS *et al.*, 2019; ALJAMEEL *et al.*, 2020).

Recognizing that the patient with DS is unique and requires an individualized approach, this study aims to characterize the behavioral management techniques used in the pediatric dental care of children with Down Syndrome, identifying the main points related to the conduct of the dental surgeon during these procedures, including the description of the main alterations/conditions and a comprehensive view of the syndrome in dental practice.

2 MATERIALS AND METHODS

A literature review was conducted in the PUBMED, SCIELO and GOOGLE SCHOLAR databases. The selection included scientific articles that address the role of pediatric dentists in the care of patients with DS. The keywords "Down syndrome", "pediatric dentistry", "oral" and "manifestation" were used.

3 LITERATURE REVIEW

3.1 PATIENTS WITH DOWN SYNDROME

Patients with special needs refer to individuals with physical, mental, and social limitations that impact their behavior and development in society and the dental environment. These patients require differentiated care (LEBRUN-HARRIS *et al.*, 2021). Down syndrome (DS) is an autosomal chromosomal disorder caused by trisomy 21, known as Trisomy 21, Trisomy G, or Mongolism (FRANK *et al.*, 2019). Clinically characterized by several physical alterations, such as short stature, ear malformations, among others, DS requires special attention in dental treatment (FAKER *et al.*, 2019).



People with DS have specific orofacial features, predisposing them to oral health problems such as periodontal disorders, malocclusion, and soft tissue disorders. The normal development of oral structures can be altered, affecting speech, chewing, and swallowing. In addition, there is a greater propensity for systemic disorders and impacts on quality of life (ALKHABULI *et al.*, 2020; KHAN *et al.*, 2022). Dental care should consider the range of conditions presented by patients with DS, from dental anomalies to neurological and respiratory disorders. The literature is still divergent on the incidence of caries in these patients, ranging from high to low, attributed to factors such as inadequate hygiene, motor and mental limitations, bruxism, and specific oral characteristics (KRISHNAN *et al.*, 2020; DESCAMPS *et al.*, 2019).

Infant oral development, crucial in the early years of life, is of particular importance for children with DS. Pediatric dentists play a key role in this context, considering the transformations in growth and development that occur in this phase (DESCAMPS *et al.*, 2019).

3.2 DENTAL CARE

The dental treatment of these patients aims to eliminate or control the difficulties related to their limitations, requiring special attention to issues such as periodontal treatment, caries lesions, malocclusion and obstructive sleep apnea. Pediatric dental management techniques offer significant benefits by preventing the progression of oral diseases. In some cases, dentists opt for general anesthesia due to the difficulties in more invasive procedures, such as surgeries, facilitating oral rehabilitation in a single session, being an option when other methods prove ineffective (ANGGRAINI *et al.*, 2020; ALKAWARI, 2021; ALOUFI *et al.*, 2023).

The early approach is preferable, and management techniques in pediatric dentistry, combined with the cooperation of parents, establish a bond that provides comfort and confidence to the child, even with neurological disability. Guidance on food and oral hygiene, passed on with the support of the family, contributes to the development of healthy habits and monitoring by specialized professionals (STENSSON *et al.*, 2021; SATTOJU, 2023).

Children's anxiety and emotional response are significant challenges in dental care, and parental collaboration plays a crucial role. Family cooperation not only in the office but also at home facilitates dental treatment and increases success rates (KRISHNAN *et al.*, 2020; LEBRUN-HARRIS *et al.*, 2021). To adequately care for patients with DS, dental professionals must be aware of their particularities, performing a detailed anamnesis and prioritizing essential care during care (TONG, 2022).



3.3 BEHAVIOR MANAGEMENT

Managing children's behavior during dental care is crucial to ensure a positive experience, avoiding trauma, and promoting safety. In cases of patients with Down Syndrome (DS), several techniques are employed, such as verbal and non-verbal communication, tell-show-do, voice control, positive reinforcement, distraction, desensitization, play therapy and, in specific situations agreed with those responsible for them, protective stabilization (KRISHNAN & KUMAR, 2020; LEBRUN-HARRIS *et al.*, 2021).

Verbal communication involves explaining procedures to the patient, while nonverbal communication observes contact and expression, reinforcing information. The saying-show-doing technique simplifies explanation by using visual and tactile models. Voice control adapts to the need, influencing the desired behavior, but is contraindicated for patients with hearing loss (Faker *et al.*, 2019; Frank *et al.*, 2019; Kaczorowska *et al.*, 2019).

Positive reinforcement motivates the child with praise and positive expressions, avoiding negative orders. In desensitization, the aim is to relax the patient, gradually exposing him to the procedures in a controlled environment. Distraction uses attractive stimuli to divert attention from aversive elements. Play therapy incorporates the use of toys to facilitate learning and reduce anxiety (BARGAGNA *et al.*, 2019; MAY & CATRONE, 2021).

Playful strategies are effective, providing significant learning to patients with DS. Protective stabilization, used as a last resort, requires clarification to caregivers and aims to contain uncooperative patients. Dental care for those living with DS should be comprehensive and collaborative, integrating diverse professionals to offer inclusive treatment tailored to the patient's specific needs (CAMERA *et al.*, 2011; BULL *et al.*, 2022).

4 CONCLUSION

Patients with DS demand a personalized dental approach, and the active participation of the family is crucial to provide comfort during care. The need for additional research to develop specific methods is highlighted. In short, early dental intervention is essential, and pediatric dentists must be prepared to deal with the particularities and singularities conferred by the syndrome, recognizing the importance of establishing healthy habits from childhood.



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