



ORIGINAL RESEARCH PAPER

Psychology

ORTHODONTIC APPROACH TO PATIENTS WITH AUTISM SPECTRUM DISORDER (ASD): A REVIEW.

KEY WORDS: Autism Spectrum Disorder, treatment, orthodontics

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ABSTRACT

Summary

In the last decade there has been an increase in the diagnosis of Autism Spectrum Disorder (ASD) and with it, an increase in orthodontic care. Studies have shown that this group presents high requirements for orthodontic treatment. Although it has been verified that the patient needs to improve dental-facial aesthetics, occlusion or oral function, a significant percentage are not treated because of behavioral difficulties and specific needs during orthodontic care. Therefore, the objective of this study is to suggest information and strategies necessary for the orthodontic care of patients with ASD in order to facilitate the treatment process.

INTRODUCTION

The Autism Spectrum Disorder (ASD) is a set of heterogeneous neurodevelopmental conditions characterized by early onset difficulties in social relationships, communication and/or behavior, with unusual, restricted and repetitive interests that can be maintained for life or change in intensity (1). The prevalence in the world population is around 1% (2) while in Chile there is no national record (3). ASD affects more men than women, and comorbidity is common (>70% have associated conditions (2). Additionally, people with ASD have atypical cognitive profiles such as impaired social relationships and social perception, added to an altered processing of perceptual and atypical information. Furthermore, genetic mutations have been linked to ASD in addition to environmental factors early in development, but its etiology has not been determined. Treatment is multidisciplinary, making it necessary for the orthodontist to gather the maximum knowledge about the patient and the specialists who have evaluated and are treating them. In this instance, the caregiver is essential in delivering information of the patient to the specialist.

The complexity of malocclusion and the need for orthodontic treatment are statistically significantly higher among children with ASD than among children without ASD regardless of age and gender (4), demanding further evaluation for the possibility of orthodontic treatment. Hence, the objective of this literature review is to collect useful information on the needs of patients with autism for an effective orthodontic care. These involve treatment approaches, precautions that should be taken and possible difficulties that may be encountered during treatment (dental attrition, cementation of orthodontic appliances and/or an orthodontic arch placement). (5). Most of the relevant studies indicate poor oral hygiene in ASD patients, while they are inconclusive regarding caries incidence. Education in the brushing technique and its constant reinforcement are useful tools to consider throughout the period of orthodontic treatment where, according to the patient's skills and abilities, the appropriate toothbrush and brushing technique will be selected (6).

The orthodontic management of an autistic person requires a thorough understanding of the disorder and its behavioral guidance theories. Therefore, the professional must be able to modify, according to each patient, the treatment approach and clinical management (6). Prior to obtaining an evaluation and history from the patient, the clinical actions must be adjusted, all this while evaluating the behavior of the patient with their environment during each appointment (7).

Before evaluating the information obtained by the caregiver or by the patient, it is necessary for the orthodontist to know the characteristics indicated by the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) (8) in terms of diagnostic criteria: A.- Social Communication and Social Interaction, where they present deficiencies in socio-emotional reciprocity, in non-verbal communicative behaviors and in development, with difficulty in maintaining and understanding relationships. B.- Restrictive and Repetitive Patterns such as movements, stereotyped speech, repetitive speech, use of objects, insistence on monotony, with inflexibility in patterns or routines whether verbal or non-verbal, with highly restricted interests that vary in their intensity and focus, both which become abnormal. Likewise, hyporeactivity or hyperreactivity to sensory stimuli, with an unusual interest in sensory aspects of the environment. C.- The symptoms can manifest themselves in different stages, since these can overwhelm the person with respect to social demand. D.- The symptoms cause a clinically important deterioration in social life and all the areas to be developed, making habitual functioning laborious. E.- These alterations are not better explained by intellectual disability, with a cognitive development disorder or a delay in it, since intellectual disability and ASD often occur together (8).

It will be necessary for the orthodontist to anticipate, plan and clearly explain all the actions that will be carried out to the patient, whether it is from the professional or the assistant. In addition, the professional must maintain a relaxed attitude, but be decisive and responsible, using positive instructions, avoiding 'no', providing safety messages, In other words, helping the patient, not making them feel scared, giving them space, avoiding gestures or speeches. For this, the use of visual reminders has proven to be useful, as has the use of storytelling (9). Likewise, it is very helpful to avoid making promises about future behaviors, either in another session or in the next clinical action, always working to create and maintain a bridge and bond with the patient. It is also recommended to introduce a pre-established order and predictability, and if disruptive behavior occurs, fully understand it from the communicative area (9). In turn, behavior modification of people with ASD should be reached in an orthodontic setting to achieve the treatment objective (10).

In Fountain's study in 2012, six typical patterns of social, communicative, and repetitive behavior were identified. These trajectories showed significant heterogeneity in

developmental pathways (11). There is also a decreased response to pain, in some cases, lack of orientation to novel sounds, aversive reaction to light, avoidance of tactile experiences, and discomfort with sounds (12). It will be important to support verbal communication with non-verbal, therefore the orthodontist must adjust their actions according to each ASD patient (12), considering the option of guidance during treatment (13).

It is important to mention that prevention must be maintained through sequential controls in order to prevent caries and gingivitis (14), thus involving the mechanical control of bacterial plaque and evaluation of technique according to the patient and, if necessary, the support of the caregiver, with education regarding diet according to the patient's capability and sensoriality, in turn analyzing whether the application of fluoride varnish during orthodontic treatment is feasible.

CONCLUSION

People with autism have heterogeneous developmental pathways, and studies have shown remarkable developmental change over time. Furthermore, the professional must consider the characteristics that patients with ASD may have that could challenge the orthodontic treatment such as: hyperfocus, depression, social and communication difficulties, anxiety, perfectionism, hypersensitivity to emotions, sensory processing disorder, struggles with changes, crisis of varying intensities, and sleep disturbances. Understanding what drives these results is therefore critical for the orthodontist. It is important to consider, prior to and during care, the communication and interaction of the patient, the flexibility of behavior, sensory processing, the assessment of clinical tools that facilitate patient management, therefore, the collection of information before treatment becomes transcendent.

REFERENCES

- (1) Lai MC, Lombardo MV, Chakrabarti B, Baron-Cohen S. Subgrouping the autism "spectrum": reflections on DSM-5. *PLoS Biol* 2013; 11:e1001544
- (2) Elsabbagh M, Divan G, Koh YJ, et al. Global prevalence of autism and other pervasive developmental disorders. *Autism Res* 2012; 5:160-79
- (3) Servicio Nacional de la Discapacidad (SENADIS), Instituto Nacional de Estadísticas. Segundo Estudio Nacional de la Discapacidad en Chile. Santiago de Chile, Ministerio de Salud, Gobierno de Chile, 2015.
- (4) Meuffels SA, Kuijpers-Jagtman AM, Tjoa STH, Bonifacio CC, Carvajal Monroy PL. Malocclusion complexity and orthodontic treatment need in children with autism spectrum disorder. *Clin Oral Investig*. 2022 Oct; 26(10):6265-6273. doi: 10.1007/s00435-022-02612-2
- (5) Büyükbayraktar ZÇ, Doruk C. Orthodontic Approach to Patients with Autism: A Review. *Turk J Orthod*. 2019 Sep; 32(3):172-175. doi: 10.5152/TurkJOrthod.2019.18078. Epub 2019 Sep 1. PMID: 31565693; PMCID: PMC6756565.
- (6) Mehta S, Uribe F. Orthodontic management of patients with autism spectrum disorder. *J Clin Orthod*. 2022 Oct; 56(10):592-594. PMID: 36572517.
- (7) Delli K, Reichart PA, Bornstein MM, Livas C. Management of children with autism spectrum disorder in the dental setting: concerns, behavioural approaches and recommendations. *Med Oral Patol Oral Cir Bucal*. 2013 Nov 1; 18(6):e862-8. doi: 10.4317/medoral.19084. PMID: 23986012; PMCID: PMC3854078.
- (8) <https://www.eafit.edu.co/ninos/reddelaspreguntas/Documents/dsm-v-guia-consulta-manual-diagnostico-estadistico-trastornos-mentales.pdf>
- (9) Cadaveira M, Waisburg, C. *Autismo, Guía para padres y profesionales*, Editorial Booket; 2018 <https://www.planetadelibros.cl/libro-autismo/352546>
- (10) Schindel RH, Chahine A, Anderson N, Banville M, Eaton-Bove J, Weidenbaum N. Behavior modification of children with autism spectrum disorder in an orthodontic setting. *J Clin Orthod*. 2014 May; 48(5):285-91. PMID: 25083672.
- (11) Fountain C, Winter AS, Bearman PS. Six developmental trajectories characterize children with autism. *Pediatrics* 2012; 129:e1112-20
- (12) Baranek GT, David FJ, Poe MD, Stone WL, Watson LR. Sensory Experiences Questionnaire: discriminating sensory features in young children with autism, developmental delays, and typical development. *J Child Psychol Psychiatry*. 2006 Jun; 47(6):591-601. doi: 10.1111/j.1469-7610.2005.01546.x. PMID: 16712636.
- (13) American Academy of Pediatric Dentistry (AAPD). Council on Clinical Affairs. Guideline on management of dental patients with special health care needs. *Pediatr. Dent.*, 34(5):160-5, 2012.
- (14) Ministerio de Salud (MINSAL). *Salud Oral Integral para Menores de 20 Años en Situación de Discapacidad que Requieren Cuidados Especiales en Odontología*. Santiago de Chile, Ministerio de Salud, Gobierno de Chile, 2012.