

REVIEW ARTICLE

Oral health problems in children with autism spectrum disorders

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ABSTRACT

Autism disorder (AD) was first identified by Leo Kanner, an American child psychologist, in 1943. The oral hygiene of autistic patients has been found to be poorer than that of non-autistic patients. Some of the common oral conditions seen in patients with ASD are dental caries; periodontal diseases, in particular gingivitis and dental trauma. Other oral health problems seen in autistic children includes bruxism, oro-facial trauma, soft tissue injury. Preventive dental care like fluoride application, dental sealants, preventive restorative treatment can be practiced to maintain a good oral hygiene. Oral hygiene maintenance and preventive dental treatment should be emphasized by the dental practitioners.

INTRODUCTION

AAPD defines special health care needs as “any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services or programs.”¹

Autism disorder (AD) was first identified by Leo Kanner, an American child psychologist, in 1943. Autism is thought of as a spectrum disorder because individuals affected with autism can have different behavioral features and symptoms. The American Psychiatric Association (APA) described two domains of ASD; “Social and the communication deficits”, “fixed interests and repetitive behaviors”.²

ASD is four times more prevalent in boys than in girls, the ratio being 4.3:1. The overall prevalence of ASD is estimated to be 1%, in United States is 1.5%, 1% in the United Kingdom, and slightly higher in Asian countries (1.81% to 2.6%).^{3,4} A steady increase in the prevalence of ASD has been observed during the last five decades.

Etiological risk factors of ASD include a combination of genetic and environmental factors such as parental age, maternal infections during pregnancy, low birth weight, muscular dystrophy, Down’s syndrome, cerebral palsy, tuberous sclerosis, neurofibromatosis, infantile spasms etc.⁵

The oral hygiene of autistic patients has been found to be poorer than that of non-autistic patients probably because of reduced manual dexterity which is required for tooth brushing

and the inability to comprehend its importance. Dental treatment for the autistic child is challenging, complicated and might be stressful for the child and his parents, as well as to the dentist.⁶ It is thereby imperative that a family centered approach based on parental preferences and concerns, the child's challenging behavior, and related comorbidities be applied so as to foster mutual trust and provide close interactions between patients, parents and dentists to make the best treatment decisions.

According to the United States Department of Health and Human Services (HHS), many of the oral health problems faced by patients with ASD are due to some deleterious oral habits such as bruxism and tongue thrust. Dental needs of patients with ASD are similar to the non-autistic population, but they are not being adequately met, because of certain difficulties experienced during their oral examination and treatment. Some of the common oral conditions seen in patients with ASD are dental caries; periodontal diseases, in particular gingivitis and dental trauma.

DENTAL CARIES

The caries status of primary and permanent dentitions in children with autism spectrum disorders (ASD) has been explored in a number of studies with conflicting results. Some report lower caries prevalence in primary, mixed and permanent dentitions and no significant association between caries prevalence, severity of ASD or the institutionalized status of patients. Children with autism have higher risk of caries prevalence and poor oral hygiene, and a lower salivary pH, they seem to need much more effort for providing oral care than healthy children.⁷ While there are divergent conclusions regarding caries status, the majority of studies unequivocally point to poor oral hygiene in children and adults with ASD although many individuals with ASD receive regular assistance with Poor oral hygiene has also been positively associated with greater caries experience, increased severity of ASD symptoms, and the presence of generalized gingivitis. The concern for periodontal disease as sequelae to poor oral hygiene in patients with ASD has been supported by the finding of significantly poorer periodontal status in children with autism compared to unaffected children.⁸

Difficulty in tooth brushing is observed patients who consume soft, sticky, or sweet food; have deleterious oral habits; and have difficulty in brushing and flossing. Rajic and Dzingalasevic reported that a combined treatment, provided by the dental team and the pedopsychiatric team, resulted in a decreased prevalence of caries in a group of children with autism as compared to another group who did not receive any treatment.⁹

Loo CY et al., 2008 have demonstrated that the patients with ASD were more likely to be caries-free and had lower DMFT scores than controls.¹⁰

Abdullah M, 2011 investigated whether children with autism have higher caries prevalence, higher periodontal problems, or more treatment needs than of non autistic patients in order to provide baseline data to enable comparison and future planning of dental services to autistic children. Sixty one patients with autism, aged 6-16 years (45 males and 16 females) attending Dubai and Sharjah Autism Centers were selected for the study. The control group consisted of 61 non-autistic patients chosen from relatives or friends of autistic patients in an attempt to have matched age, sex and socioeconomic status. Each patient received a complete oral and periodontal examination, assessment of caries prevalence, and caries severity. Compared to controls, children with autism had significantly higher DMFT than unaffected patients and significantly needed more restorative dental treatment. The restorative index (RI) and Met Need Index (MNI) for the autistic children were 0.02 and 0.3, respectively. The majority of the autistic children either had poor 59.0% (36/61) or fair 37.8% (23/61) oral hygiene as compared to healthy control subjects. Likewise, 97.0% (59/61) of the autistic children had gingivitis. The authors concluded that children with autism exhibited a higher caries

prevalence, poor oral hygiene and extensive unmet needs for dental treatment than non-autistic healthy control group.¹¹

Oral health programs that emphasize on prevention should be considered for children and young people with autism. Dentist should recommend preventive measures such as topical fluorides, apply sealant and advise the patients, their caretakers about medicines that reduce saliva by flow rate or contain sugar. Additionally, patients should be recommended to drink plenty of water, take sugar-free medicines and rinse the mouth with water after taking any drug.¹² Dentist must discourage the patients frequently on uptake of cariogenic food or beverages, and convince them to maintain adequate oral hygiene by performing hands-on demonstrations to on how to clean their teeth. Some patients cannot brush and floss independently, hence the doctor needs to advice the caretakers/ parents.^{13,14}

PERIODONTAL DISEASE

Periodontal disease; several studies have shown that the patients with autism have poorer oral hygiene and increased risk of periodontal disease.

Various studies have reported that the incidence of periodontal diseases in Autistic children is higher in as compared to the non- autistic children.^{15,16} In a study conducted by Khan ABK et al 2022, reported that 70.1% of Autistic children in their study had periodontal disease, which also showed age and gender predilection. It was higher in younger age group and males were more commonly effected.¹⁷

Many factors have been suggested as being responsible for periodontal problems amongst autistic children. These include irregular brushing, behaviour difficulties and lack of manual dexterity, as well as the lack of knowledge and awareness among parents and carers of how to maintain oral hygiene. In one study, parents reported that autistic children disliked the taste and texture of tooth paste and exhibited a gagging reflex while brushing, which makes the oral care at home challenging.^{18,19}

Maintaining good oral hygiene in children with autism is a significant task for both the parents and caregivers of the child. Even dentist needs to prescribe antimicrobial agent such as chlorhexidine for their daily use and explain them the importance of conscientious oral hygiene and frequent prophylaxis.^{12,14}

ORTHODONTIC PROBLEMS

Orthodontic concerns in individuals with ASD compared to healthy individuals include an increased tendency toward anterior open bite and dental crowding.²⁰

The rates of angle Class II malocclusion characterized by increased overjet among patients with autism can be high²¹. In many studies, it has been reported that the frequency of dental trauma is high in these patients due to increased overjet. When the overjet is >3 mm, the risk of dental trauma is doubled.²² Therefore, treatment of increased overjet is important. Some studies have reported spacing, reverse overjet, open bites, and Class II molar relationship.²⁰

Neumeyer AM et al reported, lower bone mineral density was detected in male patients with autism²³. The shortened treatment duration may be related to decreased bone mineral density levels, resulting in faster tooth movement. Gingival inflammation was observed due to poor oral hygiene during treatment. Methods, such as tell-show-do, voice control, positive reinforcement, and behavior modification, were used to increase patient's compliance during treatment.²⁴

DELAYED TOOTH ERUPTION

Delayed tooth eruption may be due to phenytoin-induced gingival hyperplasia. Phenytoin is a commonly prescribed drug for patients with autism. Ali Mihsen Hussein Al -Yassiri, conducted a study in which children were selected from private specified centers for autistic

disorders and special care in Hilla (Babylon) and Najaf cities of Iraq, by periodic visits. One hundred and twenty subjects were included in this study, aged 4.5-10.5 years. Prevalence of various orofacial findings in patients with autistic disorders was reported as dental caries (71%), dry mouth (xerostomia) (51%), bruxism (59%), delayed tooth eruption (47%), bad oral hygiene (65%), dental trauma (52%), chelitis(44%).²⁵

ORO-FACIAL TRAUMA

Trauma to the oral tissues from falls or accidents occur more commonly in patients with ASD, hence emphasizes on immediate attention which needs to be elaborated to care. Increased incidence of dental trauma has been reported in patients with ASD. Parents/caregivers need to be explained about immediate management of an avulsed tooth and to seek professional consultation at the earliest in case of any dental trauma.^{12,18}

Autistic children frequently show severe behavioral disturbances such as aggression and self-injuries. The muscular incoordination of autistic patients is described as a comorbidity that can provoke accidental falls, producing dental trauma.^{26,27} Moreover, this altered muscle tone often results in an open bite with labial flaring of the maxillary incisors and lip incompetence, predisposing these teeth to fractures.²⁸

In case of soft tissue injuries, lower lip injuries were more commonly seen in children with autism.²⁸

BRUXISM

Bruxism, by definition, is a nonfunctional, involuntary, forceful grinding or gnashing of teeth that affects 10-20% of the population.²⁹ Increased incidence of bruxism is seen in patients with autism, concomitantly with other such as pain, tooth mobility, pain in masticatory muscles, temporomandibular joint disturbances, avulsion, gag reflex, tongue thrusting etc.³⁰ Nocturnal incidences of bruxism are more common with disturbances in sleep patterns, including sleepwalking and nightmares.³¹

Due to obsessive routines, unpredictable behaviors, eccentric bodily movements resulting from inferior mental capacity and deficient communication abilities along with increased chances of self injury, the treatment options in autistic pediatric patients with bruxism are rather limited. Botulinum toxin A injections into the masseter muscle have been touted as an effective treatment modality for bruxism in pediatric patients with autism as means to control eccentric jaw movements. In children with autism, patience, sensitivity on part of the clinician, a thorough psychiatric evaluation of patient's degree of mental disability is required to deliver oral healthcare in an empathetic and appropriate manner.^{32,33,34}

CONCLUSION

Even though the communication and behavioral problems in patients with autism pose challenges for the dentist, treatment with proper planning and a lot of patience can make a difference.

ASD patient's management must be customized as per severity of the condition and clinical behavioural features. Oral hygiene maintenance and preventive dental treatment should be emphasized through targeted oral health education programs

Preventive dental care can be a pleasant experience for a child with special health care needs provided care is taken to establish trust and a sound orientation to the dental office environment, equipment and procedures.

1. Fluoride- Fluoride in Drinking Water and Fluoride Supplements, topical gel applications are especially beneficial for children handicapped to use home oral rinses.

2. Dental Sealants - Children at risk for developing dental caries due to dietary factors, salivary dysfunction, or tooth anatomy, benefit greatly from sealants as they don't require rubber dam placement
3. Antimicrobials for Gingivitis
4. Scaling and Prophylaxis procedures

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