International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Role of Pediatric Dentist in ASD – A Review

Dr. Shrushti Thakare[1], Dr. Nitin Sharma[2], Dr. Anita Choudhary[3], Dr. Sfurty Prakash[4], Dr. Eemana Bhat[5], Dr. Khushbu Soni[6], Dr. Angha Patil[7]

[1,5,6,7]PG Scholar, Pediatric & Preventive Dentistry, NIMS Dental College and Hospital
[2]Professor and Head, Pediatric & Preventive Dentistry, NIMS Dental College and Hospital
[3]Associate Professor, Pediatric & Preventive Dentistry, NIMS Dental College and Hospital
[4]Assistant Professor, Pediatric & Preventive Dentistry, NIMS Dental College and Hospital

ABSTRACT

Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by deficits in communication, social interaction, and restricted or repetitive behaviours, which collectively interfere with their ability to independently maintain a routine and participate in a typical daily lifestyle. Children with ASD face distinctive oral health challenges due to poor oral hygiene practices, selective dietary habits, and medication side effects, compounded by behavioural and sensory sensitivities.

Aim & Objectives: To review current literature on oral health issues, barriers to dental care, and evidence-based management strategies for children with ASD in paediatric dentistry.

Data Sources: Focusing on oral health status, treatment challenges, and innovative approaches in dental management for autistic children. The literature search was from databases: PubMed, Scopus, Google Scholar, Wiley & Elsevier's.

Results: Children with ASD demonstrate increased vulnerability to caries, periodontal disease, and self-injurious oral habits. Key barriers include communication deficits, dental anxiety, and limited professional preparedness. Effective strategies include individualized behavioural interventions, sensory-adapted dental environments, caregiver education, and selective pharmacological support. Innovative tools such as digital communication aids and virtual reality also show promise.

Conclusion: Pediatric dentists must adopt preventive, tailored, and interdisciplinary strategies to improve oral health outcomes and enhance quality of life for children with ASD.

Keywords: ASD, Autistic Children, Caregiver, Paediatric Dentist, Autism, Special Child, Dental Management.

Introduction

ASD is a neurodevelopmental disorder characterized by deficits in initiating social interactions, maintaining social communication, and a range of restricted repetitive behaviours (RRBs), interests, and activities.[1,2]

According to the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR)*, the term "Pervasive Developmental Disorders" encompasses five conditions: Autistic Disorder, Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder, and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS). Among these, Autism, Asperger's Disorder, and PDD-

NOS were classified as ASD. Autism Spectrum Disorder is diagnosed when symptoms are present before the age of 3 years, with impairments evident in social interaction, communication, and/or restricted, repetitive behaviors during early childhood. Classic autism is considered the most severe form of ASD. Individuals with Asperger's Syndrome typically exhibit difficulties with social intelligence and empathy despite having average or above-average cognitive and language abilities. They often develop intense, specialized interests, struggle with interpreting figurative language, and find it challenging to understand nonverbal social cues such as body language and facial expressions.[3,4,5]

By integrating insights from clinical studies, innovations in therapeutic approaches, and real-world challenges, the study seeks to provide actionable recommendations for healthcare providers, educators, and policymakers to improve the diagnosis, treatment, and support systems for children with autism.

HISTORY

The concept of autism has its historical origins in the early 20th century. The term *"autism"* was first introduced in 1911 by the Swiss psychiatrist Eugen Bleuler, who employed it to describe a withdrawal into one's inner world, observed as a clinical symptom of schizophrenia.[6] At that time, autism was not regarded as an independent disorder but rather as a component of psychotic illnesses. It was not until the 1940s that the condition began to be delineated as a distinct clinical entity. Landmark contributions from researchers such as Leo Kanner in the United States and Hans Asperger in Austria were instrumental in establishing autism as a separate neurodevelopmental disorder, characterized by impairments in social interaction, communication, and repetitive or restricted patterns of behaviour. These early descriptions laid the foundation for modern conceptualizations of ASD, gradually shifting the perspective from psychiatric pathology to a broader developmental and behavioural framework.[1]

ORAL HEALTH ISSUES

Children with ASD present with distinctive oral health challenges arising from behavioural, physiological, and sensory factors. Repetitive habits such as bruxism, tongue thrusting, and lip biting often result in tooth wear, malocclusion, and soft tissue injury. Oral hygiene is frequently compromised due to impaired motor coordination, cognitive limitations, and hypersensitivity to toothpaste or brushing. Additionally, selective dietary patterns typically favouring soft and sugary foods combined with prolonged food retention increase the risk of dental caries. Medication-related side effects, including xerostomia and gingival overgrowth, further complicate oral health.[6]

Some of the most frequently reported orofacial adverse effects include: Xerostomia, Sialorrhea, Dysphagia, Sialadenitis, Dysgeusia, Stomatitis and Gingivitis, Gingival enlargement, Glossitis, Tongue edema, and discoloration, Bruxism.[15]

These factors, coupled with difficulties in accessing consistent dental care, underscore the need for individualized preventive strategies and comprehensive management tailored to the unique needs of autistic children.[10]

ROLE OF PEDIATRIC DENTIST

Providing both primary and comprehensive preventive and therapeutic oral health care to individuals with special health care needs (SHCN) is an integral part of the specialty of pediatric dentistry.[27] Paediatric dentists play a pivotal role in addressing the unique oral health needs of children with ASD. Beyond providing routine care, they must implement individualized behavioural management techniques, employ

visual and sensory aids, and create structured, predictable environments to reduce anxiety and improve cooperation.[11,12,13] Another well-supported approach is the TEACCH (Treatment and Education of Autistic and related Communication-handicapped Children) visual schedule system, which helps guide behaviour and establish predictable daily routines. Morisaki et al. highlighted its effectiveness in maintaining behavioural control in children with autism, especially in clinical and home care environments.[13] Preventive strategies such as caregiver education, dietary counselling, and reinforcement of home-based oral hygiene practices are essential in minimizing disease burden. When required, advanced approaches including sedation or general anesthesia may be employed, but should always be considered alongside non-pharmacological methods. By integrating clinical expertise with empathy, flexibility, and interdisciplinary collaboration, paediatric dentists can significantly improve both the oral health outcomes and overall quality of life of children with ASD.[14]

CHALLENGES IN PROVIDING DENTAL CARE

Delivering dental care to children with ASD is often complicated by communication deficits, heightened sensory sensitivities, and behavioural difficulties that limit cooperation during treatment. Routine clinical stimuli such as bright lights, unfamiliar sounds, or tactile sensations may trigger anxiety or behavioural outbursts, making even basic procedures challenging. Many children also exhibit feeding issues, inconsistent oral hygiene practices, and selective eating habits that exacerbate oral disease risk. Furthermore, a lack of adequate training among dental professionals and the limited availability of specialized services create additional barriers to care. These challenges highlight the importance of tailored behavioural guidance, caregiver involvement, and modifications to the dental environment to ensure safe and effective treatment.[16,17]

Key behavioural concerns include[19]:

- Difficulty adhering to oral hygiene routines
- Oral aversion and sensory sensitivities
- Behavioural inconsistencies
- Selective eating habits
- Differences in response to behavioural conditioning
- Lower Frankl scale ratings

BEHAVIOURAL MANAGEMENT TECHNIQUES

Effective dental management of children with ASD necessitates a distinction between behavioural management and behavioural modification, as both play integral roles in facilitating cooperation and ensuring safe treatment delivery.[18] Studies have shown that traditional techniques such as **Tell Show Do** (Fig.1), **desensitization**, **positive reinforcement**, and **voice control** remain the cornerstone of behavioural guidance in paediatric dental settings.[18] These methods help familiarize the child with the dental environment, reduce anxiety, and promote gradual acceptance of procedures. The integration of **Applied Behaviour Analysis (ABA)** principles has further strengthened behavioural management approaches by focusing on reinforcement of desired behaviours and minimizing avoidance or resistance patterns. Such structured, repetitive, and reward-based frameworks are particularly effective in improving task engagement and compliance among children with ASD.[18,19]

Recent literature highlights the increasing incorporation of **sensory and communication-based adaptations** to enhance patient comfort and participation. Techniques such as **Sensory Adapted Dental**

Environments (SADE)[19], which modify lighting, sound, and tactile stimuli, have been shown to significantly reduce physiological stress responses during dental treatment Visual aids like **Picture Exchange Communication Systems (PECS)**[19] (Fig.2) and **social stories** support comprehension and predictability, thereby reducing behavioural outbursts. Moreover, adjunctive strategies, including **Animal-Assisted Therapy (AAT)**, have demonstrated encouraging outcomes in alleviating dental anxiety and fostering positive patient-clinician interactions. Collectively, these approaches emphasize the importance of individualized, patient-centered care integrating behavioural, sensory, and communicative techniques to ensure a more cooperative and compassionate dental experience for children with ASD.[19,20]

PREVENTIVE DENTAL CARE STRATEGIES

Preventive care is central to managing oral health in children with ASD, as their unique behavioural and sensory challenges often hinder routine treatment. Early intervention with structured oral hygiene training, caregiver education, and reinforcement of daily brushing practices significantly reduces disease risk. Dietary counselling is equally important, as selective eating patterns and frequent carbohydrate-rich snacking increase caries susceptibility. Regular professional check-ups, topical fluoride applications, and the use of sealants further strengthen preventive outcomes. Tailoring the dental environment to accommodate sensory sensitivities such as minimizing visual and auditory stimuli enhances cooperation and reduces anxiety. A proactive, individualized, and caregiver-supported preventive approach not only lowers the incidence of oral disease but also decreases the need for invasive procedures and pharmacological interventions.[21]

Smith et al. (2023) emphasized that early identification and prompt initiation of evidence-based interventions significantly improve long-term developmental outcomes in children with ASD. Intervention models such as Applied Behaviour Analysis (ABA)[21] and Naturalistic Developmental Behavioural Interventions (NDBIs)[22] were shown to enhance communication, social skills, and adaptive behaviour when started during the preschool years. Studies highlighted that family participation, parent training, and consistent therapeutic engagement outside clinical settings further reinforce skill generalization. However, research by Johnson et al. (2024) noted that despite promising short-term results, large-scale studies confirming the neurobiological advantages of very early intervention remain limited. The authors underscored that individualized, high-intensity, and family-centered approaches remain the cornerstone of effective ASD management.

SEDATION AND PHARMACOLOGICAL INTERVENTION

In children with ASD, conventional behavioural guidance techniques may not always achieve the cooperation necessary for safe and effective dental treatment. In such cases, pharmacological interventions, including conscious sedation and general anesthesia, become valuable adjuncts. These approaches help manage severe anxiety, uncooperative behaviour, and heightened sensory sensitivities, thereby facilitating comprehensive dental care. However, their use requires careful case selection, detailed medical and behavioural assessment, and collaboration with caregivers and anaesthesiology teams to minimize potential risks. While pharmacological methods ensure treatment feasibility in challenging cases, they should be reserved for situations where non-pharmacological strategies are insufficient, with emphasis placed on preventive care and behavioural desensitization to reduce repeated reliance on sedation.[7]

Some studies discussed the critical role of sedation in managing children with ASD when conventional behaviour guidance proves inadequate. Conscious sedation using agents such as midazolam, hydroxyzine, chloral hydrate, or nitrous oxide is indicated for minor procedures, while general anesthesia (GA) is preferred for extensive or uncooperative cases. Marshall et al.[23] reported that nearly 40% of ASD patients undergoing dental treatment require GA, though parental acceptance remains low due to perceived risks. Emerging evidence from Yonsei University (2017)[24] highlighted submucosal midazolam as a safe, rapid-onset alternative to GA in select cases. Additionally, pharmacological management of behavioural comorbidities using antipsychotics like risperidone and aripiprazole—remains adjunctive but essential for improving treatment compliance. The literature underscores the importance of individualized sedation planning, thorough medical evaluation, and interdisciplinary coordination to ensure safety and effectiveness in dental management of children with ASD.[25,26]

RESEARCH AND FUTURE DIRECTIONS

Despite significant advances, notable gaps remain in understanding and managing the oral health needs of children with ASD. Future research should focus on developing standardized, evidence-based protocols for dental care, with emphasis on non-pharmacological behavioural interventions and sensory-adapted environments. Innovations such as artificial intelligence, mobile health applications, and virtual reality hold promise in improving early diagnosis, patient engagement, and treatment outcomes. Greater emphasis is also required on interdisciplinary collaboration among paediatric dentists, occupational therapists, psychologists, and educators to create comprehensive care models. Expanding training for dental professionals in special needs care and integrating caregiver-centered approaches will be essential to bridge current disparities. Advancing these research priorities will contribute to more effective, empathetic, and sustainable dental care strategies for children with ASD.

Conclusion

Children with ASD present unique oral health challenges that require a comprehensive and tailored approach to care. Effective management extends beyond clinical treatment, encompassing preventive strategies, individualized behavioural guidance, and, when necessary, pharmacological support. Paediatric dentists must adopt flexible, patient-centered methods while collaborating closely with caregivers and interdisciplinary teams to ensure safe and effective outcomes. Continued research, professional training, and innovative technologies will be essential in bridging existing gaps and enhancing the quality of dental care. Ultimately, a proactive, empathetic, and evidence-based approach can significantly improve both the oral health and overall quality of life of children with ASD.

REFERENCES

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 5th ed.; American Psychiatric Association: Arlington, VA, USA, 2013.
2. Lyall, K., Croen, L., Daniels, J., Fallin, M. D., Ladd-Acosta, C., Lee, B. K., et al. (2017). The changing epidemiology of autism spectrum disorders. Annual Review of Public Health, 38(1), 81–102.
3. Johnson CP, Myers SM, Council on Children with Disabil ities. (2007), Identification and evaluation of children with autism spectrum disorders. Pediatrics, 120(5):1183-1215.
4. Newschaffer CJ, Croen LA, Daniels J Giarelli E, Grether JK, Levy SE, et al. (2007), The epidemiology of autism spectrum disorders. Annu Rev Public Health, 28:235-358.

5. Al-Salehi SM, Al-Hifthy EH, Ghaziuddin M. (2009), Au tism in Saudi Arabia: presentation, clinical correlates and comorbidity. Transcult Psychiatry, 46(2):340-347.
6. Widyagarini A, Suharsini M. Dental care for children with autism spectrum disorder. Dental Journal. 2017 Sep;50(3):160-5.
7. Chandrashekhar S, Bommangoudar JS. Management of autistic patients in dental office: a clinical update. International journal of clinical pediatric dentistry. 2018 Jun 1;11(3):219.
8. Geiger DA, Kern JK, Geiger MR. A prospective cross sectional cohort assessment of health, physical and behavioral problems in Autism spectrum disorders. Maedica 7:193200, 2012.
9. Mari-Bauset S, Zazpel I,mari-Sanchis A,Llopis-Gonzalez A, Morales-Su arez-Varela M. Food selectivity in ASD: A Systematic Review. J Child Neurol 2013 Oct 4
10. Sarnat H, Samuel E, Ashkenazi-Alfasi N, Peretz B. Oral health characteristics of preschool children with autistic syndrome disorder. Journal of Clinical Pediatric Dentistry. 2016 Jan 1;40(1):21-5.
11. Mah JW, Tsang P. Visual schedule system in dental care for patients with autism: A pilot study.
J Clin Pediatr Dent 2016;40:393–399.
12. Morisaki I, Ochiai TT, Akiyama S, Murakami J, Friedman CS. Behavior guidance in dentistry for patients with autism spectrum disorder using a structured visual guide. J Disabil Oral Health 2008;9:136–140.
13. Sadia-Fakhruddin K, Yehia-El Batawi H. Effectiveness of audiovisual dis traction in behavior modification during dental caries assessment and sealant placement in children with autism spectrum disorder. Dent Res J (Isfahan) 2017;14:177–182.
14. Olszewaska K, Dunin-Wilczyńska I. Orthodontic management of children with autism – Review of the literature. Dent Med Probl 2011;48:459–463.
15. El Ashiry EA. Autism and pediatric dentistry: A literature review. Egyptian Dental Journal. 2020 Apr 1;66(2-April (Orthodontics, Pediatric & Preventive Dentistry)):789-98.
16. Bernath B, Kanji Z. Exploring barriers to oral health care experienced by individuals living with autism spectrum disorder. Canadian Journal of Dental Hygiene. 2021 Oct 1;55(3):160.
17. Thomas N, Blake S, Morris C, Moles DR. Autism and primary care dentistry: Parents' experiences of taking children with autism or working diagnosis of autism for dental examinations. Int J Paediatr Dent. 2018;28(2):226–38.
18. AlBhaisi IN, Kumar MS, Engapuram A, Shafiei Z, Zakaria AS, Mohd-Said S, McGrath C. Effectiveness of psychological techniques in dental management for children with autism spectrum disorder: a systematic literature review. BMC Oral Health. 2022 May 6;22(1):162.
19. Goyal T, Kalra N, Tyagi R, Khatri A, Sabherwal P, Yangdol P. Evidence-based analysis of multi-pronged approaches for education and behavior management of autistic patients in a dental setting. Special Care in Dentistry. 2023 Nov;43(6):856-68.
20. Mohamed H, Abdalla E. Behavioral guidance approaches to provide dental care for patients with autism spectrum disorder: A review of the literature. Acta Sci. Dent. Sci. 2022 Oct;6:71-85.
21. Hyman SL, Levy SE, Myers SM, Council on Children with Disabilities, Section on Developmental and Behavioral Pediatrics, Kuo D, Apkon S, Brei T, Davidson LF, Davis BE, Ellerbeck KA, Hyman SL. Executive summary: identification, evaluation, and management of children with autism spectrum disorder. Pediatrics. 2020 Jan 1;145(1):e20193448.

22. Schreibman L et al. Naturalistic developmental behavioral interventions: empirically validated treatments for autism spectrum disorder. J. Autism Dev. Disord 45, 2411–2428 (2015). [PubMed: 25737021]
23. Marshall J, Sheller B, Williams BJ, Mancl L. Parental Attitudes Regarding Behavior Guidance of Dental Patients with Autism. Pediatr Dent. 2008;30(5):400-7
24. Jo CW, Park CH, Lee JH, Kim JH. Managing the behaviour of a patient with autism by sedation via submucosal route during dental treatment. Journal of dental anesthesia and pain medicine 2017;17(2):157-161
25. Politte LC, McDougle CJ. Atypical antipsychotics in the treatment of children and adolescents with pervasive developmental disorders. Psychopharmacology (Berl) 2014; 231: 1023–36. [PubMed: 23552907]
26. Anagnostou E, Aman MG, Handen BL, et al. Metformin for treatment of overweight induced by atypical antipsychotic medication in young people with autism spectrum disorder: A randomized clinical trial. JAMA Psychiatry 2016; 73: 928–37. [PubMed: 27556593]
27. American Academy of Pediatric Dentistry. Management of dental patients with special health care needs. The Reference Manual of Pediatric Dentistry. Chicago, IL: American Academy of Pediatric Dentistry; 2025:364-71.