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Navigating early childhood caries management in children with autism and developmental disorders: A U.S. perspective

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Abstract

Early Childhood Caries (ECC) is a prevalent and preventable oral health concern among children, presenting unique challenges when managing those with autism and developmental disorders. This paper explores navigating ECC management in this population from a U.S. perspective. Understanding the impact of autism spectrum disorder (ASD) and developmental disorders on oral health is crucial, given their higher risk of ECC due to behavioral, dietary, and hygiene factors. Diagnosis and assessment pose particular challenges, requiring tailored approaches to accommodate sensory sensitivities and communication barriers. Preventive strategies encompass parent/caregiver education, customized oral hygiene instruction, dietary counseling, and fluoride varnish application. Behavioral management techniques, such as desensitization and creating a positive dental experience, are essential for successful treatment. Treatment approaches may involve restorative procedures, considering sedation or anesthesia for children with heightened anxiety or sensory issues, often requiring collaboration with multidisciplinary teams. Long-term management emphasizes maintaining oral health habits and regular dental visits, adjusting to changes in behavior and developmental needs over time. Addressing barriers to care, including access, financial constraints, and provider education, is crucial for effective ECC management in this population. ECC management in children with autism and developmental disorders requires a comprehensive, multidisciplinary approach tailored to individual needs. Future research should focus on refining diagnostic techniques, enhancing preventive interventions, and improving access to dental care services for this vulnerable population. By addressing these challenges, we can strive to improve oral health outcomes and quality of life for children with autism and developmental disorders.

Keywords: Early; Childhood; Management; Children; Autism; Developmental; Disorders; A U.S

1. Introduction

Early Childhood Caries (ECC), commonly known as baby bottle tooth decay or nursing caries, is a significant public health issue affecting young children worldwide (Wong, 2022). ECC is characterized by the presence of one or more decayed (cavitated or non-cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child under the age of six. It is a multifactorial disease influenced by various factors, including diet, oral hygiene practices, fluoride exposure, and socioeconomic status. Prevalence studies have consistently shown ECC to be a prevalent and concerning issue, particularly among vulnerable populations (Anil and Anand, 2017). In the United States, ECC remains one of the most common chronic childhood diseases, with disparities observed among different socioeconomic and racial/ethnic groups. According to the Centers for Disease Control and Prevention (CDC), approximately 23% of children aged 2 to 5 years old in the United States have experienced ECC. However, prevalence rates are notably higher among certain subgroups, such as children from low-income families and those with

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developmental disorders like autism spectrum disorder (ASD) (Boat et al., 2015). Children with autism and other developmental disorders face unique challenges in managing ECC. These challenges stem from various factors, including sensory sensitivities, communication difficulties, behavioral issues, and difficulties with adaptive behaviors. Children with ASD often exhibit repetitive behaviors, limited interests, and difficulties with social interaction, which can impact their oral hygiene practices and dietary habits. Additionally, sensory sensitivities may make dental visits and procedures particularly challenging for these children, leading to heightened anxiety and fear (Stein et al., 2022). Moreover, children with developmental disorders may have difficulty tolerating dental treatment, making it challenging for dental professionals to provide adequate care. These challenges can result in delayed diagnosis, untreated caries, and ultimately, poorer oral health outcomes for children with autism and developmental disorders compared to their typically developing peers. Given the increased risk and unique challenges associated with managing ECC in children with autism and developmental disorders, there is a pressing need for tailored approaches and strategies to address their specific needs and improve oral health outcomes (Bono et al., 2019). This paper aims to explore these challenges in depth and provide insights into navigating ECC management in this vulnerable population from a U.S. perspective.

1.1. Understanding autism and developmental disorders

Autism Spectrum Disorder (ASD) is a complex neuro developmental condition characterized by persistent challenges in social interaction, communication, and restricted or repetitive behaviors (Mukherjee, 2017). It encompasses a wide range of symptoms and severity levels, leading to the term "spectrum." ASD typically manifests in early childhood and lasts throughout a person's lifetime, although symptoms may change over time. The exact cause of ASD remains unclear, but it is believed to involve a combination of genetic and environmental factors. Other developmental disorders include conditions such as intellectual disability, attention-deficit/hyperactivity disorder (ADHD), communication disorders, and specific learning disorders (Conant and Miller, 2024). Like ASD, these disorders can impact various aspects of a child's development, including cognitive functioning, language skills, social interaction, and adaptive behaviors. Children with developmental disorders often require additional support and services to address their unique needs and help them reach their full potential. Early identification and intervention are critical for maximizing outcomes and improving quality of life for these individuals (Woods and Wetherby, 2003).

The impact of autism and developmental disorders on oral health and dental care can be significant and multifaceted. Children with ASD and developmental disorders may have difficulty expressing their dental needs and understanding instructions from dental professionals. Communication deficits can hinder the establishment of effective dentist-patient relationships and impede the delivery of comprehensive dental care. Many children with autism and developmental disorders experience sensory sensitivities, which can make dental visits and procedures overwhelming and distressing. Sensory issues may include sensitivity to bright lights, loud noises, tactile sensations, and taste or texture preferences. These sensitivities can affect the child's ability to tolerate dental examinations, cleanings, and treatments (Schafer and Adair, 2000). Children with ASD and developmental disorders may exhibit challenging behaviors during dental appointments, such as agitation, resistance, and noncompliance. These behaviors can complicate the delivery of dental care and pose safety risks for both the child and dental staff. Limited motor skills, coordination difficulties, and a lack of understanding about the importance of oral hygiene may contribute to poor oral hygiene practices among children with autism and developmental disorders. As a result, they may be at increased risk for dental caries, gingivitis, and other oral health problems. Some children with ASD and developmental disorders may have restrictive or selective eating habits, favoring foods that are high in sugars and carbohydrates. These dietary preferences can increase the risk of dental caries and contribute to poor oral health outcomes (Mobley et al., 2009). Overall, the impact of autism and developmental disorders on oral health and dental care underscores the importance of a patient-centered, multidisciplinary approach to dental management. Dental professionals must collaborate with caregivers, educators, and healthcare providers to develop individualized treatment plans that address the specific needs and challenges of children with autism and developmental disorders, promoting optimal oral health and overall well-being (Albino et al., 2012).

1.2. Risk factors for early childhood caries (ECC) in children with autism and developmental disorders

Children with autism and developmental disorders may struggle with establishing and maintaining effective oral hygiene habits due to challenges with motor coordination, sensory sensitivities, and difficulties with routine tasks (Stein Duker, 2019). Brushing teeth, flossing, and using mouthwash may be particularly challenging for these individuals, leading to inadequate plaque removal and an increased risk of dental caries. Many children with autism and developmental disorders exhibit resistance to dental visits and procedures due to sensory sensitivities, communication difficulties, and anxiety. Fear of unfamiliar environments, loud noises, bright lights, and tactile sensations can trigger negative reactions and make it challenging for dental professionals to perform necessary examinations and treatments (Casamassimo et al., 2012). Some children with autism and developmental disorders engage in pica behavior, which involves mouthing or consuming non-food items such as toys, clothing, or objects in the environment. Pica behavior can

increase the risk of dental caries by exposing teeth to acidic or sugary substances and abrasive materials, leading to enamel erosion and tooth decay. Children with autism and developmental disorders may engage in self-injurious behaviors such as biting, head-banging, or scratching, which can cause trauma to oral tissues and teeth. These behaviors can result in dental injuries, fractures, or soft tissue damage, further compromising oral health and increasing the risk of dental caries (Guiglia et al., 2010).

Children with autism and developmental disorders may have limited food preferences and exhibit selective eating habits, favoring foods that are high in sugars, carbohydrates, and processed ingredients. Consuming sugary snacks, sweets, and beverages increases the risk of dental caries by providing a favorable environment for bacterial growth and acid production in the mouth. Sensory sensitivities may lead children with autism and developmental disorders to avoid certain food textures, such as crunchy or fibrous foods, in favor of softer, smoother textures (Andes, 2021). As a result, they may consume a diet that is high in soft, sticky, or pureed foods, which can adhere to teeth and promote plaque formation, contributing to dental caries. Some children with autism and developmental disorders may experience difficulties with feeding and swallowing, known as dysphagia, due to oral motor impairments or sensory sensitivities. As a result, they may have prolonged exposure to food particles and liquids in the oral cavity, increasing the risk of dental caries and oral infections.

Children with autism and developmental disorders may have impaired fine motor skills and coordination, making it challenging for them to perform manual dexterity tasks such as brushing and flossing effectively (Sam, 2020). Difficulties with hand-eye coordination, grip strength, and spatial awareness can hinder their ability to manipulate toothbrushes and dental floss, resulting in inadequate plaque removal and poor oral hygiene. Sensory sensitivities can impact children's tolerance for oral hygiene practices and oral care products. Strong flavors, textures, and sensations associated with toothpaste, mouthwash, and dental instruments may be aversive and trigger negative reactions, leading to resistance or avoidance of oral hygiene routines. Noncompliance, resistance, and aversion to oral hygiene practices are common among children with autism and developmental disorders, posing challenges for caregivers and dental professionals in promoting and maintaining good oral hygiene habits (Kupzyk et al., 2023). Strategies such as visual schedules, social stories, and positive reinforcement techniques may be helpful in facilitating cooperation and compliance during oral care routines.

Children with autism and developmental disorders are at increased risk of ECC due to a combination of behavioral, dietary, and oral hygiene factors (Kotha et al., 2018). Addressing these risk factors requires a multidisciplinary approach involving caregivers, educators, healthcare providers, and dental professionals to develop tailored interventions and support strategies that promote optimal oral health outcomes for this vulnerable population.

1.3. Diagnosis and assessment of early childhood caries (ECC)

Clinical Examination Techniques, Dental professionals typically perform a visual examination of the teeth, gums, and oral tissues to detect signs of early childhood caries (ECC) (Ismail and Sohn, 1999). This includes looking for visible cavities, white spots, brown discoloration, or softening of tooth enamel. X-rays or dental radiographs may be taken to assess the extent of caries, particularly in areas that are not easily visible during a visual examination. Radiographs can reveal cavities between teeth, under fillings, or in the roots of primary teeth. Dental explorers or probes may be used to gently probe the teeth for areas of softness or decay. This helps identify cavitated and non-cavitated lesions that may not be visible to the naked eye. Dental professionals evaluate the child's risk factors for ECC, including diet, oral hygiene practices, fluoride exposure, and presence of developmental disorders (nil and Anand, 2017). Understanding these risk factors helps inform preventive strategies and treatment planning.

1.3.1. Challenges in Diagnosis and Assessment in Children with Autism and Developmental Disorders

Children with autism and developmental disorders may have difficulty communicating their dental symptoms or cooperating during dental examinations (Marshall et al., 2007). Limited verbal skills, echolalia, and challenges with expressive and receptive language can hinder the exchange of information between the child and dental professional. Sensory sensitivities can make dental visits and examinations overwhelming and distressing for children with autism and developmental disorders. Bright lights, loud noises, tactile sensations, and unfamiliar environments may trigger sensory aversions and lead to resistance or avoidance of dental care. Noncompliant behaviors, resistance, and anxiety are common among children with autism and developmental disorders during dental appointments (Kupzyk and Allen, 2019). These behavioral challenges can interfere with the dental examination process, making it difficult for dental professionals to obtain accurate diagnostic information and perform necessary treatments. Children with autism and developmental disorders may have a limited attention span or difficulty sitting still for prolonged periods, making it challenging to conduct a thorough dental examination. Short, structured appointments and breaks may be necessary to accommodate the child's attentional needs and minimize stress (Bögels et al., 2010).

1.3.2. Importance of Early Detection

Early detection of ECC allows for prompt intervention and preventive measures to prevent further decay and complications (Zafar et al., 2009). Timely diagnosis enables dental professionals to implement strategies such as fluoride varnish application, dietary counseling, and oral hygiene instruction to arrest caries progression and preserve tooth structure. Primary teeth play a crucial role in speech development, chewing function, and maintaining space for permanent teeth. Early detection and treatment of ECC help preserve primary teeth and minimize the need for extensive restorative procedures or premature tooth loss (Finucane, 2012). Untreated ECC can cause pain, discomfort, and infection, negatively impacting the child's quality of life and overall well-being. Early detection allows for timely intervention to alleviate symptoms and prevent the progression of dental disease, promoting oral health and comfort. Early detection and management of ECC in children with autism and developmental disorders contribute to better long-term oral health outcomes and reduced risk of future dental problems. By addressing caries risk factors and providing comprehensive dental care, dental professionals can support optimal oral health and quality of life for these individuals. Diagnosing and assessing ECC in children with autism and developmental disorders requires sensitivity, patience, and tailored approaches to accommodate their unique needs and challenges. Early detection of ECC is crucial for preventing complications, preserving primary teeth, and promoting long-term oral health and well-being (Edem, 2018). Collaboration between dental professionals, caregivers, and healthcare providers is essential to ensure timely diagnosis and effective management of ECC in this vulnerable population

1.4. Preventive strategies

Parents and caregivers play a crucial role in promoting good oral health habits in children with autism and developmental disorders (AbdAllah et al., 2018). Educating caregivers about the importance of oral hygiene practices, such as brushing teeth twice daily, flossing, and using fluoride toothpaste, helps empower them to support their child's oral health needs. Dental professionals should demonstrate proper oral hygiene techniques to parents and caregivers, emphasizing the importance of thorough plaque removal and cavity prevention. Providing hands-on guidance and visual aids can help caregivers understand how to effectively clean their child's teeth and gums. Creating a consistent oral hygiene routine is essential for children with autism and developmental disorders (DeMattei et al., 2007). Caregivers should be encouraged to incorporate oral care activities into the child's daily schedule, such as brushing teeth after meals and before bedtime, to reinforce positive habits and promote oral health. Dental professionals should address any challenges or barriers that caregivers may face in implementing oral hygiene practices with their child. This may include providing strategies for managing resistance, sensory sensitivities, or behavioral difficulties during oral care routines.

1.4.1. Oral Hygiene Instruction Tailored to the Individual Child

When providing oral hygiene instruction, dental professionals should take into account the child's sensory sensitivities and preferences. Using toothbrushes with soft bristles, non-foaming toothpaste, and gentle brushing techniques can help minimize sensory aversions and discomfort during oral care. Visual supports such as picture schedules, social stories, and visual timers can help children with autism and developmental disorders understand and follow oral hygiene routines. Visual aids provide concrete, sequential instructions and can enhance comprehension and compliance during oral care activities (Ngoh and Shepherd, 1997). Dental professionals may recommend adaptive equipment or assistive devices to facilitate oral hygiene for children with autism and developmental disorders. This may include modified toothbrushes with larger handles or specialized grips, electric toothbrushes with oscillating heads, or floss holders for easier manipulation.

1.4.2. Dietary Counseling and Modification

Dental professionals should provide dietary counseling to parents and caregivers to promote a balanced diet that supports optimal oral health. Encouraging consumption of nutritious foods such as fruits, vegetables, whole grains, and lean proteins while limiting sugary snacks and beverages helps reduce the risk of dental caries and supports overall well-being. Children with autism and developmental disorders may have preferences for certain textures or flavors that contribute to poor dietary choices (Cermak et al., 2010). Dental professionals should advise caregivers to minimize consumption of sticky, sugary foods and beverages that promote bacterial growth and acid production in the mouth, increasing the risk of dental caries. Encouraging adequate hydration with water throughout the day helps maintain saliva production and rinses away food particles and bacteria that can contribute to dental caries. Dental professionals should educate caregivers about the importance of offering water as the primary beverage choice and limiting consumption of sugary drinks (Levine and Stillman-Lowe, 2019).

1.4.3. Use of Fluoride Varnish and Other Preventive Measures

Fluoride varnish is a safe and effective preventive measure for reducing the risk of dental caries in children, including those with autism and developmental disorders (Clark et al., 2020). Dental professionals should recommend fluoride varnish applications every three to six months to strengthen tooth enamel, remineralize early lesions, and inhibit bacterial growth. Dental sealants are thin plastic coatings applied to the chewing surfaces of molars to prevent food debris and bacteria from accumulating in the deep pits and fissures. Sealants provide an additional layer of protection against dental caries and are particularly beneficial for children with autism and developmental disorders who may have difficulty with oral hygiene practices. Encouraging regular dental visits is essential for monitoring oral health status, detecting early signs of dental caries, and implementing preventive interventions. Dental professionals should work collaboratively with caregivers to schedule routine check-ups and cleanings, providing opportunities for ongoing education and support in maintaining oral health (Watt-Smith, 2009). Implementing behavior management techniques such as positive reinforcement, desensitization, and distraction can help children with autism and developmental disorders feel more comfortable and cooperative during dental appointments. Creating a calm, supportive environment and using communication strategies tailored to the individual child's needs can promote a positive dental experience and facilitate preventive care. Preventive strategies for children with autism and developmental disorders should focus on empowering parents and caregivers to establish and maintain good oral hygiene habits, providing tailored oral hygiene instruction and support, offering dietary counseling to promote a balanced diet and minimize sugary intake, and implementing fluoride varnish and other preventive measures to reduce the risk of dental caries and support optimal oral health outcomes. By addressing these key components of preventive care, dental professionals can help promote a lifetime of healthy smiles for children with autism and developmental disorders (Fisher, 2012).

1.5. Behavioral management techniques

Sensory Sensitivities and Behavioral Challenges, children with autism and developmental disorders often experience sensory sensitivities, which can manifest as aversions or heightened responses to sensory stimuli such as bright lights, loud noises, strong odors, and tactile sensations (Singh, 2019). Sensory sensitivities can trigger anxiety, distress, and behavioral challenges during dental visits, making it challenging for dental professionals to provide effective care. Dental professionals should be trained to recognize signs of sensory discomfort or distress in children with autism and developmental disorders. These may include covering ears, avoiding eye contact, fidgeting, crying, or exhibiting self-stimulatory behaviors (e.g., hand-flapping, rocking). Identifying behavioral cues allows dental professionals to intervene proactively and adjust their approach to accommodate the child's sensory needs. Recognizing that each child's sensory profile is unique, dental professionals should take an individualized approach to behavioral management. This involves collaborating with parents and caregivers to gather information about the child's sensory preferences, triggers, and coping strategies, allowing dental professionals to tailor their approach accordingly (Bono et al., 2019).

1.5.1. Strategies for Creating a Positive Dental Experience

Building trust and rapport with the child is essential for creating a positive dental experience. Dental professionals should greet the child warmly, introduce themselves using age-appropriate language, and engage in non-threatening interactions to establish a sense of safety and security. Visual supports such as social stories, visual schedules, and picture cards can help prepare children with autism and developmental disorders for dental visits and procedures. These visual aids provide concrete, sequential information about what to expect during the dental appointment, reducing uncertainty and anxiety. Gradual exposure to dental stimuli and environments can help desensitize children with autism and developmental disorders to sensory triggers and reduce anxiety over time. Dental professionals can gradually introduce dental instruments, equipment, and procedures in a step-by-step manner, starting with non-invasive activities such as exploring the dental office, sitting in the dental chair, and handling dental tools. Using positive reinforcement techniques such as praise, rewards, and token systems can motivate children with autism and developmental disorders to cooperate during dental appointments. Verbal praise, stickers, small toys, or preferred items can serve as incentives for participating in oral care activities and demonstrating cooperative behaviors (Nelson, 2019).

1.5.2. Use of Desensitization Techniques

Dental professionals may implement desensitization protocols to gradually expose children with autism and developmental disorders to dental stimuli and environments. These protocols typically involve breaking down the dental visit into manageable steps and gradually increasing the child's exposure to sensory triggers over multiple sessions. Sensory integration therapy involves structured activities designed to help children with autism and developmental disorders regulate their sensory responses and improve their ability to tolerate sensory stimuli. Dental professionals may incorporate sensory integration techniques such as deep pressure, tactile stimulation, and vestibular input to help children become more comfortable with dental procedures. Virtual reality technology can be used to create

immersive, interactive experiences that simulate dental procedures in a controlled, virtual environment. Virtual reality allows children to familiarize themselves with dental tools, equipment, and procedures in a safe, non-threatening setting, helping reduce anxiety and fear associated with dental visits (Burns-Nader, 2011). Parents and caregivers play a critical role in supporting desensitization efforts at home and in the dental office. Dental professionals should educate parents about desensitization techniques and encourage them to reinforce positive coping strategies and relaxation techniques with their child between dental visits. Behavioral management techniques for children with autism and developmental disorders should be tailored to their individual sensory needs, preferences, and coping mechanisms. By understanding sensory sensitivities and behavioral challenges, implementing strategies to create a positive dental experience, and using desensitization techniques to gradually expose children to dental stimuli, dental professionals can help children with autism and developmental disorders feel more comfortable, cooperative, and confident during dental appointments.

1.6. Treatment approaches

Restorative Procedures, Dental caries in children with autism and developmental disorders may require restorative treatment such as dental fillings to restore damaged tooth structure and prevent further decay (Fakroon et al., 2015). Dental professionals use tooth-colored composite resin or amalgam materials to fill cavities and restore the shape, function, and appearance of affected teeth. In cases where dental caries has progressed to involve the dental pulp (nerve tissue) of the tooth, pulp therapy may be necessary to save the tooth and alleviate pain. Pulp therapy techniques such as pulpotomy (removal of infected pulp tissue from the pulp chamber) or pulpectomy (complete removal of pulp tissue from the root canal system) may be performed, followed by placement of a dental crown to protect the remaining tooth structure. Stainless steel crowns are commonly used in children with autism and developmental disorders to restore severely decayed or damaged primary teeth. These prefabricated metal crowns provide durable, long-lasting coverage of the entire tooth surface, protecting it from further decay and fracture while maintaining proper function and aesthetics. In cases where primary teeth are extensively decayed, infected, or unable to be restored, dental extraction may be necessary to remove the affected teeth and prevent complications such as pain, infection, and damage to permanent teeth. Dental professionals may recommend extraction followed by space maintenance to preserve proper dental arch integrity and facilitate eruption of permanent teeth (Tillay, 2020).

1.6.1. Sedation and Anesthesia Considerations

Dental sedation techniques such as nitrous oxide (laughing gas), oral sedatives, or intravenous (IV) sedation may be used to help children with autism and developmental disorders relax and cooperate during dental procedures. Sedation can reduce anxiety, minimize sensory sensitivities, and facilitate a more comfortable dental experience for the child. In cases where children are unable to tolerate dental treatment under conscious sedation or have extensive treatment needs, general anesthesia may be indicated. General anesthesia allows dental procedures to be performed while the child is unconscious and pain-free, ensuring safety, efficiency, and optimal treatment outcomes (Karim et al., 2008). Prior to administering sedation or anesthesia, dental professionals conduct a comprehensive preoperative assessment to evaluate the child's medical history, dental treatment needs, airway anatomy, and overall health status. This assessment helps determine the most appropriate sedation or anesthesia technique and minimize potential risks and complications. During sedation or anesthesia, dental professionals monitor the child's vital signs, oxygen saturation levels, and anesthesia depth to ensure safety and stability throughout the procedure. Following treatment, children are closely monitored during the recovery period and provided with postoperative instructions and analgesics to manage pain and discomfort (Chou et al., 2016).

1.6.2. Collaboration with Multidisciplinary Teams

Children with autism and developmental disorders often require coordinated care from multiple healthcare providers, educators, therapists, and specialists to address their complex needs and optimize treatment outcomes. Dental professionals collaborate closely with other members of the multidisciplinary team to develop comprehensive treatment plans tailored to the child's individual needs and preferences (Strunk et al., 2017). Effective communication and information sharing among members of the multidisciplinary team are essential for ensuring continuity of care and addressing the unique challenges associated with treating children with autism and developmental disorders. Dental professionals work collaboratively with caregivers, educators, therapists, and medical providers to exchange relevant information, share insights, and coordinate interventions to support the child's oral health and overall well-being. Multidisciplinary collaboration enables dental professionals to access specialized expertise and resources for addressing behavioral challenges and providing appropriate accommodations for children with autism and developmental disorders. By working together, healthcare providers can develop individualized strategies and support plans to help children feel comfortable, safe, and supported during dental visits and procedures. Multidisciplinary collaboration emphasizes a family-centered approach to care, recognizing the importance of involving parents and

caregivers as active participants in the child's treatment journey (Shelton et al., 1994). Dental professionals collaborate with families to understand their priorities, preferences, and concerns, empowering them to make informed decisions and participate in shared decision-making processes regarding their child's oral health care.

Treatment approaches for children with autism and developmental disorders require a comprehensive, multidisciplinary approach that addresses their unique needs, challenges, and preferences (Strunk et al., 2017). By offering restorative procedures tailored to individual treatment needs, considering sedation and anesthesia options when necessary, and collaborating closely with multidisciplinary teams, dental professionals can provide high-quality, patient-centered care that promotes optimal oral health and overall well-being for children with autism and developmental disorders.

1.7. Long-term management and follow-up

Maintenance of Oral Health Habits, consistency is key in maintaining good oral health habits for children with autism and developmental disorders (Erwin et al., 2022). Caregivers should establish a daily routine that includes brushing teeth twice a day with fluoride toothpaste, flossing, and rinsing with mouthwash, if appropriate. Using visual schedules and social stories can help reinforce the importance of oral hygiene practices and promote adherence to the routine. Children with autism and developmental disorders may require ongoing supervision and assistance with oral hygiene tasks to ensure proper technique and thorough plaque removal. Caregivers should provide hands-on guidance and support as needed, using adaptive equipment or modified techniques to accommodate the child's abilities and preferences. Using positive reinforcement techniques such as praise, rewards, and token systems can motivate children to participate in oral hygiene activities and maintain good oral health habits. Caregivers should offer verbal encouragement, stickers, small toys, or preferred items as rewards for cooperative behavior and successful completion of oral care routines. Caregivers should monitor the child's dietary habits and encourage consumption of nutritious foods that support optimal oral health, such as fruits, vegetables, dairy products, and lean proteins. Limiting sugary snacks and beverages, particularly between meals, helps reduce the risk of dental caries and promotes overall well-being (Palacios et al., 2009).

1.7.1. Regular Dental Visits and Monitoring

Regular dental visits are essential for monitoring oral health status, detecting early signs of dental disease, and providing preventive interventions. Dental professionals should work collaboratively with caregivers to schedule routine check-ups every six months or as recommended based on the child's individual needs and risk factors. During routine dental visits, dental professionals conduct comprehensive examinations to assess oral health status, evaluate the effectiveness of oral hygiene practices, and detect any signs of dental caries or other oral health problems. Dental radiographs may be taken periodically to evaluate the condition of the teeth and supporting structures. Dental cleanings performed by dental hygienists help remove plaque and tartar buildup from the teeth and gums, reducing the risk of dental caries and gum disease (Choo et al., 2001). Professional cleanings also provide an opportunity for dental professionals to reinforce oral hygiene instruction and address any concerns or questions raised by caregivers. Based on the findings of the dental examination, dental professionals develop individualized treatment plans tailored to the child's specific needs and preferences. Treatment may include preventive interventions such as fluoride varnish application, dental sealants, or dietary counseling, as well as restorative procedures or behavioral management techniques as needed.

1.7.2. Addressing Changes in Behavior and Developmental Needs

Children with autism and developmental disorders may experience changes in behavior, sensory sensitivities, or developmental needs over time (McCormick et al., 2016). Dental professionals should conduct regular assessments to monitor these changes and adjust treatment approaches accordingly. Multidisciplinary collaboration is essential for addressing changes in behavior and developmental needs and providing comprehensive care for children with autism and developmental disorders. Dental professionals should communicate regularly with other members of the child's healthcare team, including pediatricians, therapists, and educators, to coordinate interventions and support strategies. Recognizing that each child's needs and preferences are unique, dental professionals should take an individualized approach to addressing changes in behavior and developmental needs. This may involve modifying treatment techniques, implementing new behavioral management strategies, or providing additional support and accommodations to help the child feel comfortable and safe during dental visits. Family-centered care emphasizes the importance of involving parents and caregivers as active participants in the child's treatment journey. Dental professionals should engage caregivers in discussions about changes in behavior and developmental needs, soliciting their input and collaborating with them to develop tailored interventions and support plans that meet the child's evolving needs (Stein Duker et al., 2019). Long-term management and follow-up for children with autism and

developmental disorders require a holistic approach that focuses on maintaining oral health habits, scheduling regular dental visits and monitoring, and addressing changes in behavior and developmental needs over time. By providing ongoing support, education, and individualized care, dental professionals can help children with autism and developmental disorders achieve optimal oral health and overall well-being throughout their lives.

1.8. Addressing Barriers to Care

Access to Dental Care Services, access to dental care services may be limited for children with autism and developmental disorders living in rural or underserved areas. Geographic disparities in the distribution of dental providers can result in long travel distances and transportation challenges for families seeking dental care. Children with autism and developmental disorders may require specialized dental care that is not readily available in all dental practices. Access to pediatric dentists, behavioral management specialists, and providers trained in treating patients with special needs may be limited, particularly in certain regions or communities. Children with autism and developmental disorders may experience dental anxiety and fear, which can deter them from seeking dental care and exacerbate barriers to access. Negative past experiences, sensory sensitivities, and communication difficulties may contribute to dental phobia and avoidance behavior among these individuals. Language and cultural barriers can pose challenges to accessing dental care services for children from diverse backgrounds. Limited English proficiency, lack of culturally competent care, and unfamiliarity with the healthcare system may prevent families from seeking dental care for their child with autism or developmental disorders (Abatan et al., 2024).

Financial considerations, including lack of dental insurance coverage or inadequate coverage for specialized services, may hinder access to dental care for children with autism and developmental disorders. Many families face barriers to obtaining dental insurance or may be underinsured, limiting their ability to afford necessary dental treatments and preventive services. Even with dental insurance coverage, families may incur significant out-of-pocket expenses for specialized dental care, sedation or anesthesia services, and assistive devices or adaptive equipment. High deductibles, copayments, and coinsurance costs can create financial burdens for families already facing economic challenges. Medicaid reimbursement rates for dental services are often lower than private insurance reimbursement rates, leading some dental providers to limit their participation in Medicaid programs or reduce the number of Medicaid patients they serve. Limited Medicaid provider networks and low reimbursement rates can result in decreased access to dental care for children with autism and developmental disorders covered by Medicaid. Children with autism and developmental disorders may require specialized dental care, behavioral management techniques, or sedation/anesthesia services to facilitate dental treatment. The cost of these specialized services can be prohibitively expensive for families, particularly those with limited financial resources or inadequate insurance coverage (Dussault and Franceschini, 2006).

Dental professionals may lack awareness or understanding of the unique needs and challenges faced by children with autism and developmental disorders, leading to suboptimal care and inadequate support for these individuals. Limited education and training on autism spectrum disorders and developmental disabilities may contribute to gaps in provider knowledge and competence. Communication difficulties between dental providers and children with autism and developmental disorders can impede the delivery of effective care and exacerbate barriers to access. Dental professionals may struggle to communicate with nonverbal or minimally verbal children, leading to misunderstandings, frustration, and suboptimal treatment outcomes (Van Servellen, 2009). Many dental professionals receive limited training or exposure to managing patients with special needs, including children with autism and developmental disorders, during their formal education and clinical training. The lack of specialized training in behavioral management techniques, sensory integration strategies, and cultural competency may hinder providers' ability to effectively care for this population. Increasing access to continuing education and training opportunities on autism spectrum disorders, developmental disabilities, and special needs dentistry can help improve provider competence and confidence in treating children with autism and developmental disorders. Continuing education courses, workshops, and hands-on training experiences can enhance dental professionals' knowledge and skills in delivering patient-centered care to this vulnerable population.

Addressing barriers to care for children with autism and developmental disorders requires a multifaceted approach that encompasses improving access to dental care services, addressing financial considerations, and enhancing provider education and training (Jones et al., 2024). By implementing strategies to overcome these barriers, stakeholders can work together to ensure that children with autism and developmental disorders receive timely, high-quality dental care that meets their unique needs and promotes optimal oral health outcomes.

2. Conclusion

Addressing early childhood caries (ECC) management in children with autism and developmental disorders requires a comprehensive, multidisciplinary approach that considers their unique needs, challenges, and preferences. ECC is a significant oral health concern affecting children worldwide, including those with autism and developmental disorders. These children face unique challenges in managing ECC due to sensory sensitivities, communication difficulties, behavioral challenges, and limited access to dental care services. Children with autism and developmental disorders are at increased risk of ECC due to a combination of behavioral factors, dietary habits, and oral hygiene practices. Understanding and addressing these risk factors are essential for preventing dental caries and promoting optimal oral health outcomes. Implementing behavioral management techniques such as desensitization, positive reinforcement, and individualized approaches can help children with autism and developmental disorders feel more comfortable and cooperative during dental visits and procedures. Restorative procedures, sedation/anesthesia considerations, and collaboration with multidisciplinary teams are integral components of ECC management in children with autism and developmental disorders. Tailored treatment plans, informed by a thorough assessment of the child's needs and preferences, are essential for achieving successful treatment outcomes. Maintenance of oral health habits, regular dental visits, and monitoring are crucial for ensuring the long-term oral health and well-being of children with autism and developmental disorders. Addressing changes in behavior and developmental needs over time requires ongoing assessment, collaboration, and support from multidisciplinary teams.

Continued efforts to increase awareness, knowledge, and competence among dental professionals in managing patients with autism and developmental disorders are needed. Specialized training programs, continuing education courses, and interdisciplinary collaborations can help improve provider confidence and competence in delivering patient-centered care to this population. Research is needed to develop and evaluate tailored interventions and support strategies specifically designed to address the unique needs and challenges of children with autism and developmental disorders in managing ECC. These interventions may include sensory-based approaches, communication strategies, and behavioral management techniques tailored to individual preferences and abilities. The integration of technology, such as virtual reality simulations, telehealth platforms, and mobile applications, holds promise for enhancing access to dental care services and supporting remote monitoring and management of oral health in children with autism and developmental disorders. Research on the effectiveness and usability of these technologies in ECC management is warranted. Longitudinal studies are needed to examine the long-term oral health outcomes and trajectories of children with autism and developmental disorders, including the impact of early interventions, preventive measures, and changes in behavior and developmental needs over time. Understanding the factors that influence oral health outcomes in this population can inform targeted interventions and improve clinical practice. Advancing research and practice in ECC management in children with autism and developmental disorders requires a concerted effort to address barriers, enhance provider education and training, develop tailored interventions, and promote interdisciplinary collaboration. By working together, stakeholders can improve access to high-quality dental care, reduce oral health disparities, and promote optimal oral health and well-being for children with autism and developmental disorders.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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