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Review Article

Dental Management of Children with Special Health Care Need

Ahmed Safaa Waly[1]*, Walaa Basem Ahmed[1], Nadia Aqeel Alanazi[2], Shahad Amer Alshehri[2], Yahay Hassan Alzahrani[2], Faris Zaal Alshammari[2], Mohammad Abdullatif Alkood[2], Maher Marwan Aref[2], Anoud Mohammed Alotaibi[3], Areej Ayed Derham[4] and Waad Amer Aljaber[5]

[1]AlFaraby Dental and Nursing College, Saudi Arabia

[2]Ministry of Health, Saudi Arabia

[3]Ministry of Foreign Affairs, Saudi Arabia

[4]King Abdulaziz University, Saudi Arabia

[5]Ibn Sina National College, Saudi Arabia

***Corresponding Author**: Ahmed Safaa Waly, AlFaraby Dental and Nursing College, Saudi Arabia.

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Abstract

Introduction: Children with special needs are those who have a certain disability that restricts them to perform the routine procedures efficiently and presents with unique challenges for the clinician to provide them better oral health care system which includes a unique treatment planning in terms of medical, behavioural, dental view as well as maintaining oral health over the lifetime. The dental condition of such children is directly or indirectly related to their disabilities. There have been a higher prevalence of dental caries, poor oral hygiene, and other gingival and periodontal diseases associated with disability. This specialty of pediatric dentistry provides both primary and comprehensive, preventive, and therapeutic oral health care to children with special health care needs (SHCN).

Aim of the Study: The purpose of this article is to explain the characteristics of some developmental/acquired disabilities and medically compromised states in children, along with their best suitable dental management provided by an oral healthcare practitioner.

Methodology: The review is comprehensive research of PUBMED from the year 1975 to 2018.

Conclusion: SHCN poses an increased risk of various oral diseases which adversely affect their quality of life. The oral health of children with special health care needs has always been found inadequate when compared to otherwise healthy children in terms of their dentition, anomalies associated, and treatment needs. They are usually given less attention from their families and health professionals due to the treatment challenges involved. Thus, a well-versed team of knowledgeable dentists, equal parental involvement in challenging treatment plans, knowing the level of child's development for routine skills language and appropriate attention can help a patient to better cope up with treatment.

Keywords: *Physically and Mentally Challenged Child; Dental Treatment; Planning*

Introduction

The 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 use of specialized services or programs. The condition may be congenital, developmental, acquires through disease, trauma, or environmental cause and may impose a limitation

in performing daily self-maintenance activities or substantial limitation in major life activity. Health care for an individual with special needs requires specialized knowledge, as well as increased awareness and attention, adaptation and accommodative measures beyond what are considered routine" [1].

The dental management of special needs the demand for dental treatment for the patients with intellectual disability, physical limitation, social and emotional deficit also grew. This requires a broad vision of the dentist, often leading to a multidisciplinary approach [2]. However, many professionals still find it challenging to provide better treatment due to lack of proper professional training, insecurity, ergonomic limitation, changes in the routine of the consulting room requiring physical adaptation and specialized equipment [3,4].

Common oro-dental problems in children with SHCN

Dental caries

Dental caries is most common finding among children with SHCN with multiple factors associated with it such as uncoordinated chewing which may leave more food in the mouth, difficulty in performing proper toothbrushing and maintaining oral hygiene, gagging on toothpaste, cariogenic diet, medicine induced xerostomia, GERD, vomiting, crowding, etc [6].

Figure 1: *Dental caries in a child with SHCN [5].*

Trauma and bruxism

Trauma frequently occurs in children with poor muscle coordination, seizures, abnormal reflexes, delayed development along with self-injurious behaviour which may damage oral structures.

Bruxism is very common among SHCN children (cerebral palsy and severe mental retardation). Bruxism eventually causes enamel loss, tooth sensitivity, flat teeth surfaces, pain, gingival disease and headaches [5].

Tooth eruption

Tooth eruption may vary, may be delayed, normal or advanced in children with SHCN. However, delayed eruption is most commonly seen in Down syndrome and hypothyroidism [7].

Figure 2: *Dental trauma in SHCN [5].*

Enamel hypoplasia and demineralization

Children with developmental delays or with certain genetic syndromes exhibit a higher risk of enamel hypoplasia. It appears in the middle or occlusal third of teeth (most commonly molars and maxillary incisors). Demineralization is characterized by white spot lesion on the surface of teeth [5].

Figure 3: *Hypoplastic and demineralized teeth and white spot lesions on incisors [5].*

Dental anomalies

The teeth may vary in shape, size, and number and poses a risk of poor oral hygiene and further caries [5].

Malocclusion and crowding

Malocclusion and crowding of teeth are often seen in abnormal muscle coordination, mental retardation, and craniofacial abnormalities. It results of disharmonious relationship between extraoral and intraoral musculature. The hypertonicity of facial muscles results in constriction of maxillary and mandibular arches and further resulting in anterior and posterior open bites as seen in spastic type of cerebral palsy while there is spacing and flaring between teeth in athetosis type cerebral palsy due to hypotonicity of muscles [8].

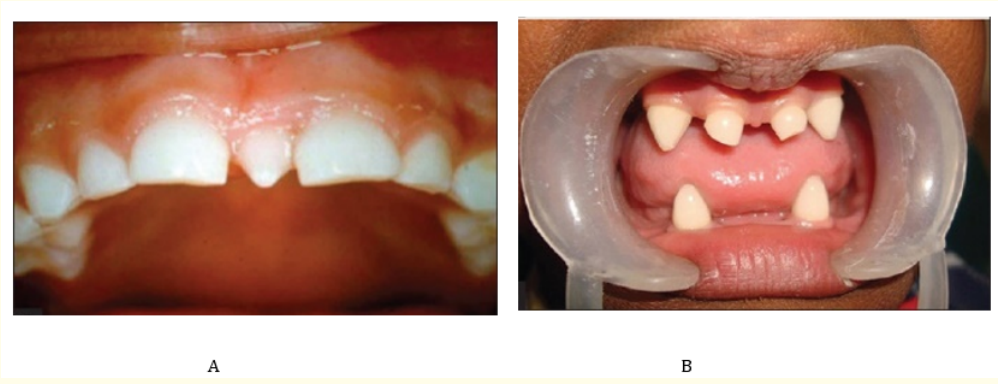

Figure 4: *(A) Oligodontia (B) Mesiodens (supernumerary tooth) [5].*

Figure 5: *Anterior open bite in patients with cerebral palsy [5].*

Gingival hyperplasia

Gingival hyperplasia is usually secondary to medication used such as antiepileptic drugs (phenytoin) for seizures, calcium channel blockers (nifedipine) and cyclosporine [5].

Figure 6: *Drugs induced gingival hyperplasia [5].*

Classification of special health care need children [9]

Frank and winter (1974)	Agerholm [10]	Nowak (1976)
• Blind and Partially sighted • Deaf and Partially deaf • Educationally subnormal • Epileptic • Maladjusted • Physically handicapped • Defective of speech • Senile	• Intrinsic category: The handicapped condition cannot be eliminated/separated/improves significantly in child e.g. Cerebral palsy, mental retardation • Extrinsic category: The handicapped condition may be made better with strategic meticulous care e.g. Social deprivation.	• Physically handicapped -polio • Mentally handicapped – retardation • Congenital- cleft lip and palate • Convulsive- epilepsy • Communication- deafness • Systemic -haemophillia • Metabolic- juvenile diabetes • Osseous disorder- rickets • Malignant disorder- leukaemia

Some disabilities and medical condition that a dentist may encounter in practice

Cerebral palsy

Cerebral palsy is a group of permanent disorders of the development of movement and posture, limiting the activity that is attributed to non-progressive disturbances that occurred in fetal or infant brain. The motor disturbances are accompanied by sensation, perception, communication, cognition, behavioral, epilepsy, and musculoskeletal problems [11].

Oral manifestation

- Dental caries and dental erosion.
- Angles class II with increased overjet and overbite, unilateral crossbites and open bites with abnormal oral habits mainly because of uncoordinated movement of jaws lips and tongue, open mouth posture with postural tongue thrust and mouth breathing.
- Dental trauma: fracture of enamel and dentin is the most common dental injuries.
- Bruxism: male gender and GERD are some factors commonly seen with bruxism in a disabled child [11].

Dental management

The treatment involves the following points:

1. Assessment of intellectual maturity: classified as educable, trainable and not trainable.
2. Postural compliance in the dental chair is compromised due to muscular rigidity, hypercontractility, uncoordinated movement, and ataxic gait.
3. Preventive care: training and awareness of oral hygiene practices to child and caretaker, fluoride, and sealant application.

Apart from these measures, other factors should be considered in a dental office such as a patient using a wheelchair should be treated on a wheelchair itself. The patient must remain stabilized and maintained on the dental chair with both the arms and legs in the midline of the chair as comfortable as possible; the limbs should not be forced in unnatural positions. To avoid gag reflex, a choice of two radiographic technique is available that is 45-degree oblique head plate and reverse bitewing (buccal procedure). Avoid muscle fatigue as much as possible [9].

Intellectual disability

Intellectual disability (previously referred as mental retardation) defined as subaverage functioning in 2 or more of the following adaptive skill areas: communication, self-help, home living; social and interpersonal skills; use of community resources; self-direction; health and safety "functional academics," leisure and work by American Academy of Intellectual and Developmental Disabilities [12].

Oral manifestation [9]

- Baby bottle tooth decay, medication-induced dental decay.
- Altered salivary flow and tooth decay.
- Malocclusion mainly due to early significant loss of tooth structure and extraction, loss of space for permanent dentition, abnormal jaw development.
- Fractured and non-vital teeth, soft tissue injuries and bruxism.
- Poor oral hygiene and intense halitosis due to heavy plaque a calculus deposition as well as remnants of food in teeth.

Dental management [9]

Intellectually disables children exhibit uncertain emotional behavior and restlessness with short attention span; thus, it is essential to reduce anxiety by establishing right dentist-patient and parent understanding to adequately deliver oral therapy to a child. The main two objectives include:

1. Effective communication: It is essential to make the child understand the proceedings by simple verbal interaction.
2. Familiarisation (Desensitisation): An apprehensive child patient needs to be desensitized to reduce anxiety and fear of things which may be unknown to him by familiarising him with the dental office environment.
3. Attentive listening: Helps to quickly and effectively assess the communication skills
4. Short appointment time: Since the attention span of children is small [9].

Autism spectrum disorders (ASD)

Oral manifestation

- High caries susceptibility due to ingestion of cariogenic food, poor tongue control, and inability to brush [13].
- Poor oral hygiene and gingivitis due to heavy plaque accumulation and hormonal influence [14].
- Damaging oral habits- bruxism, pica lip, cheek biting, tongue thrusting.

Dental management [9]

1. The first appointment should be short, positive, and comforting. The child may be allowed to bring items that may comfort him. The child must be properly familiarised with dental operatory environment.
2. Autistic patients maintain a consistent environment; thus, even the smallest changes in the environment may trigger anxiety. They seem extremely sensitive to loud noises and movements.
3. An autistic child shows extreme resistance when held and react fearfully in certain situations, prone to tantrums and aggressive behavior, thus behavior modification techniques are incorporated for desirable behavior. Papoose board wrapping can be used to calm autistic children.
4. Use of general anesthesia and sedation when required to provide proper pediatric dental care.

Visual and hearing impairment

Vision impairment is when visual activity is not more than 20/200 along with corrective lenses. Hearing disability is a condition in which the patient is partially or completely unable to detect some sound frequencies [9].

Oral manifestation

Children with visual and hearing impairment cause a similar type of dental caries prevalence. Maintaining oral hygiene and failure to do so with subsequent gingival inflammation and periodontal problems is challenging in patients with visual disability and so as in hearing in visually impaired child [15-17].

Dental management

Communication can be very challenging in a visually impaired child; thus, dental care should be confined to one dentist. Braille dental pamphlets and audio tapes can reduce chair time anxiety. It must always be kept in mind that the patient cannot see a dentist's smile so a distraction, loud noises, sudden touch, or voice must be avoided. Horizontal scrub and modified bass methods have proven to effectively reduce plaque and gingival index in the visually impaired child.[18] The dental treatment of patients with hearing disability mostly depends on communicative skills like facial expression, physical contact, and consistent eye contact. Removing the mask reducing the background noise may prove to be helpful for child or lip-reading while the dentist explains the procedure [19].

General recommendation and guideline on the treatment of a patient with SHCN by AAPD (American Academy of pediatric dentistry) include: Scheduling appointments, dental home, patient assessment, planning dental treatment informed consent, behavioral guidance, medical consultation, preventive strategies for better assessment of needs of a patient, subsequent dental treatment, maintenance of oral hygiene and child and parent education on oral healthcare [20].

Conclusion

In recent years, the dental oral healthcare provider and the parental group have shown increased concern in providing oral health care to children with SHCN. However, the importance of dental care for these children has often been overlooked by health planner and parents because of the additional burden of medical treatment. As a result of the realization that individual with a disability whether congenital or acquired are entitled to achieve appropriate dental treatment and rehabilitation to enable them to maximize the level of functioning and normalizing their lives up to a great extent.

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