

Original Contributions

Nutritional and dental issues in patients with intellectual and developmental disabilities

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ABSTRACT

Background. People with intellectual and developmental disabilities are among the most disadvantaged and underserved groups of dental patients. Considerable health care disparities for this population have been identified, particularly oral and dental health as well as access to dental care services. People with Down syndrome and cerebral palsy have a variety of nutritional and dental considerations.

Conclusions. These people have a higher prevalence of untreated caries and periodontal disease than the general population and may have higher rates of obesity, edentulism, and chronic oral and systemic diseases. Diet choices may affect the oral health and may play an important role in the systemic health of these people. Suggestions to improve and affect dietary intake are provided.

Clinical Implications. Health issues within this population require a holistic approach to care. Concerns about oral health and diet must be addressed to support optimal health.

Key Words. Oral health; caries risk; diet; intellectual/developmental disabilities; Down syndrome; cerebral palsy.

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Among the most disadvantaged and underserved groups of dental patients are those characterized as special need, particularly people with intellectual and developmental disabilities (IDD).¹⁻³

Considerable health care disparities for this population have been identified, particularly oral and dental health as well as access to dental care services.^{1,4} The IDD population is at increased risk of developing oral diseases and experiencing higher incidence of caries, oral pain, periodontal disease, and other oral or dental problems than the general population.^{1,4} Underlying congenital anomalies may contribute to and exacerbate these conditions.^{1,4}

People with IDD are at increased risk of diet- and nutrition-related problems over their life spans.⁵ Concerns include failure to thrive (FTT) during infancy, feeding difficulties, obesity, heart disease, osteoporosis, and medication-nutrient interactions.⁶⁻¹⁰

Nutrition and oral health play major roles in the systemic health of this complex population. Oral health care professionals need to consider the multifaceted health care needs of patients with IDD, including medical, behavior, social, and diet or nutritional concerns when managing oral health.

In this article, we outline some of the commonly noted oral and dental findings that affect diet choices and highlight the intertwined relationship between diet, nutrition, and oral health for people with IDD. Down syndrome (DS) and cerebral palsy (CP) are highlighted. [Table 1](#) highlights the most common nutrition and oral health issues in these populations.

DOWN SYNDROME

DS, the most common of the genetic disorders, is caused by the presence of an extra full or partial copy of the 21st chromosome with approximately 6,000 (or 1 in 691) babies in the United States born with a diagnosis of DS annually.¹² The disorder is characterized by developmental problems, including cognitive delays, short stature and obesity, decreased muscle tone, congenital heart disease, gastrointestinal issues, and numerous orofacial findings.^{1-3,13-17}

Newborns may have difficulty with breast-feeding or bottle feedings because they are not able to suckle well, resulting in poor weight gain. As the child grows, obesity is often present because of excessive caloric intake and lower energy needs, secondary to hypotonia.^{9,11-17} Behavioral

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Table 1. Common oral health and nutrition concerns in the intellectual and developmental disabilities population.⁶⁻¹¹

DISORDER	ORAL HEALTH CONCERNS	NUTRITIONAL OR FEEDING ISSUES
Down Syndrome	<ul style="list-style-type: none"> ● Hypoplastic enamel <ul style="list-style-type: none"> ○ increased risk of developing caries ● Risk of periodontal disease <ul style="list-style-type: none"> ○ tooth loss ○ pain and infection ● Dental anomalies <ul style="list-style-type: none"> ○ delayed tooth development ○ partial anodontia ○ Class III malocclusion resulting in a prognathic appearance ○ congenitally missing teeth ● Anatomic anomalies <ul style="list-style-type: none"> ○ microstomia ○ protruding tongue with macroglossia ○ narrow, short palate ● Bruxism <ul style="list-style-type: none"> ○ tooth damage ● Behavioral issues <ul style="list-style-type: none"> ○ decreased cooperation ○ difficulties managing oral health prevention strategies ● Oral hypersensitivities ● Plaque and calculus ● Reduced saliva production <ul style="list-style-type: none"> ○ caries ○ inadequate bolus preparation 	<ul style="list-style-type: none"> ● Poor oral intake in infancy <ul style="list-style-type: none"> ○ underweight ○ difficulty with breast-feeding ● Older children and adults being overweight or obese <ul style="list-style-type: none"> ○ obstructive sleep apnea ○ behavioral issues with use of food as a reward ● Altered gastrointestinal structure or function <ul style="list-style-type: none"> ○ hypotonia ○ low fiber intake ○ celiac disease ● Xerostomia ● Chewing and swallowing difficulties <ul style="list-style-type: none"> ○ pain ○ incomplete chewing ○ risk of choking, aspiration ○ retention and pocketing of food ● GERD*
Cerebral Palsy[†]	<ul style="list-style-type: none"> ● Malocclusion ● Periodontal disease ● Caries ● Plaque and calculus ● Drooling ● Hyperactive bite or gag reflex ● Oral rigidity or spasticity ● Behavioral issues <ul style="list-style-type: none"> ○ decreased cooperation ○ difficulties managing oral health prevention strategies 	<ul style="list-style-type: none"> ● Inadequate oral intake <ul style="list-style-type: none"> ○ failure to thrive ● Being overweight or obese <ul style="list-style-type: none"> ○ lack of physical exercise ○ overfeeding with tube feedings ● Severe protein energy malnutrition <ul style="list-style-type: none"> ○ hypertonicity ○ dysphagia ● Inadequate fluid and fiber intake ● Constipation ● Chewing and swallowing difficulties <ul style="list-style-type: none"> ○ risk of aspiration ○ retention and pocketing of food ● Positioning difficulties ● Assistance required with feedings ● Prolonged feeding times <ul style="list-style-type: none"> ○ fatigue ● Altered bowel function <ul style="list-style-type: none"> ○ constipation ● Drug-nutrient interactions <ul style="list-style-type: none"> ○ Antiepileptic medications ● GERD

* GERD: Gastroesophageal reflux disease. † There are a variety of ways to classify cerebral palsy, including severity, affected body parts, and degree of motor function, resulting in a wide range of complications.

challenges are typical in people with DS, and foods or snacks should not be used as rewards because these can contribute to both caries and overweight or obesity status. Referral to a psychologist to manage behavioral issues is recommended.

People with DS exhibit a variety of oral and dental problems, including early and rapidly progressing periodontal disease and delayed dental development of the primary teeth.¹⁷ Permanent teeth may be missing, hypoplastic, or have thin enamel, increasing the risk of developing caries and experiencing difficulty chewing. The oral cavity may be small with resulting tongue protrusion, and the incisors may be flared, both contributing to difficulty chewing and swallowing that may require a change in textures and consistency of foods.^{13,14} Congenital heart disease is common and may affect respiratory status, resulting in hypoxia and consequently affecting eating.^{9,11,13,16,18}

DS case study

MK is a 30-year-old man who resides at home with his aging parents. His parents are having difficulty caring for their son and struggle with finding accessible transportation. MK has moderate intellectual disability (reduced ability to self-care in both oral hygiene and diet), obesity (body mass

ABBREVIATION KEY

- BMI:** Body mass index.
CP: Cerebral palsy.
DS: Down syndrome.
FTT: Failure to thrive.
GERD: Gastroesophageal reflux disease.
IDD: Intellectual and developmental disabilities.
SLP: Speech language pathologist.

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