

# Clinical Assessment of Nutrition Status in Dental Practice

**Dr. Rajat Kumar Singh**

SSR  
Dept. of Pedodontics  
Faculty of Dental Sciences,  
I.M.S., Banaras Hindu University, Varanasi

**Dr. Kritika Murawat**

Dental Practitioner  
Varanasi

**Dr. Gaurav Salgia**

Dental Practitioner  
Mumbai

**Dr. Vidhi Salgia**

Dental Practitioner  
Mumbai

**Dr. Anand A. Tripathi**

Asst. Professor  
VYWS's Dental College & Hospital  
Amravati (Maharashtra)

## Abstract

There is a dynamic, two-way relationship between diet/nutrition and oral health: a balanced diet with adequate energy and nutrients is essential for oral health and the condition of the oral cavity and surrounding structures can impact diet and nutritional well-being. In healthy individuals, "the complex interplay involving the teeth, jaws, muscles, tongue and salivary glands is accomplished with ease and enjoyment" allowing an individual to select and consume a balanced diet.

As elucidated in the American Dietetic Association's position on nutrition and oral health, nutrition is an integral component of oral health care, and the role of the dental professional includes screening for nutrition risk, diet education, and referral to a registered dietitian as needed for medical nutrition therapy.

**Keywords :** Balanced diet, Dental care, Nutrition, Oral health, Osteoporosis

## Introduction

Nutrition is the biochemical bridge between food and life, the link between dietary constituent and active metabolites. Nutrition is molecular biology in action where a few milligrams or a few micrograms of a particular nutrient may mean the difference between health and disease and even between life and death.<sup>1</sup> It has become increasingly clear that what we eat is a major factor in determining both the quantity and quality of our lives. The basis of our dietary choices, and thus our nutritional status, is established early in life.<sup>2</sup> From the movement of conception to the instant of demise, man is dependent upon the life giving chemicals supplied by the daily diet for cell growth, maintenance, repair and replication.<sup>1</sup>

## Nutritional Screening in Dental Practice

Nutrition screening at a minimum, includes subjective statements relative to diet, oral health and weight history, as well as objective assessment of anthropometric measurements and condition of the oral cavity. Nutrition risk factors is defined as "characteristics that are associated with an increased likelihood of poor nutritional status".<sup>6</sup> Nutrition risk is based on the type and extent of risk factors present. It is always prudent to refer any patient for whom a practitioner suspects nutrition/diet concerns to a registered dietitian for medical nutrition therapy. The outcomes of nutrition-risk screening in the dental setting are based on individual needs and may include: Basic diet evaluation and education by the dental professional to meet.

## Oral & Nutritional Health Needs

- Prescription for oral supplements (name, volume, frequency)
- Referral to social services for food/supplement resources in community
- Referral to a registered dietitian for nutrition consultation and medical nutrition therapy

## Patient History

Patient history is an important component of nutrition evaluation. Past medical history will reveal information about acute, chronic, and terminal diseases that may impact oral and nutritional well-being. In addition to asking patients about their past medical/surgical and drug history, diet and nutrition-risk evaluation questions may also be asked. History of unintentional weight change may signal potential nutrition deficits, lack of money for food, or systemic disease. A weight change of greater than 10 lbs in less than 6 months is considered a significant risk factor in any individual. Weight loss is characterized by loss of body fat stores and lean body mass.<sup>3</sup>

## Medical history

This will delineate those children who are most susceptible to the development of nutritional disorders. Statistically primary nutritional deficiencies resulting from inadequate intake are most prevalent in children from indigent Nutrition-ignorant, nutrition permissive, or food faddist families. Secondary deficiencies are most common in children with organic or functional defects that restrict ingestion and utilization. The medical history often provides the most important substantive evidence on which to base a diagnostic judgment. No detail should be omitted since significant clues may emerge at any point in the history-taking process.<sup>7-9</sup>

Medical history will reveal individual information about acute or chronic diseases and immunologic disorders that are risk factors in patients with concurrent oral/dental problems affecting their ability to consume their usual diet manifestations, including periodontal disease, dysgeusia, increased caries risk, candidiasis, burning tongue, and poor wound healing particularly when blood sugars are elevated) may, in turn, impact appetite, eating ability and, finally, oral intake. Neuropathies and opportunistic microbial infections in the oral cavity affect oral health, nutrition status and, inevitably, diabetes control.<sup>12-15</sup> Assessment of growth and development in relation to age and sex is of particular importance in the nutritional appraisal of children and adolescents; Growth retardation is a common stigma of nutritional deprivation, height, weight. And

skin fold thickness is useful anthropometric data that are indicative of nutritional status, Head, chest and arm circumference measurements in children.<sup>1-4</sup>

Autoimmune diseases such as pemphigus vulgaris, rheumatoid arthritis, lupus and Sjogren's syndrome increase nutrition risk by virtue of the oral and facial sequel of the disease and the medications used to manage disease. Intraoral and extraoral lesions associated with pemphigus vulgaris can impair intake and oral sensory perception during periods of active disease.<sup>18,19</sup> The xerostomia associated with Sjogren's syndrome increases risk of dental caries, periodontitis and oral fissures, which may make eating difficult or painful. Head, neck and oral cancer, affect nutrition and oral health status.

Surgeries to remove malignant tumors in the oral cavity may have severe functional effects on eating ability. Radiation to the oral cavity can destroy taste and the quality and quantity of saliva. Chemotherapy can cause anorexia, nausea, and vomiting, ultimately compromising nutrition status. Temporomandibular joint pain may result in limited opening of the mouth and compromised masticatory function which may be evident in individuals with rheumatoid arthritis. Arthropathies have associated medication side effects; however, joint-related effects may compromise eating ability. Steroids used to manage vesiculobullous and other diseases increase nitrogen (protein) and calcium losses, thus increasing needs. All of these factors that the dental professional may routinely evaluate provide evidence of nutrition-risk status. Osteoporosis is increasingly common in women (one in two women) and men (one in eight men).<sup>16</sup> The relationship between osteoporosis and oral health is increasingly evident, particularly in reference to periodontal disease and implant surgery. The dental professional should be familiar with high-risk individuals and should question them about any history of osteoporosis and whether or not they have undergone screening or diagnostic evaluations.<sup>23</sup>

## Risk factors for Osteoporosis Include

- Long-term (more than 1 month) steroid use.
- Cushing's syndrome, Hyperparathyroidism, hyperthyroidism, end-stage Renal disease.
- History of organ transplants treated with cyclosporine and steroids.
- Spinal cord injury.
- Women who are peri menopausal or of small stature.
- Family history of osteoporosis.



- Prolonged low calcium intake combined with inactivity.
- Prolonged lack of exposure to sunlight.

Patients at risk for osteoporosis should be given referrals for a dexascan to determine bone density and the presence of osteoporosis and for medical Individuals with HIV infection or AIDS are at increased risk of oral infections and disease manifestations that impact functional and sensory functions of the oral cavity. Oral complications and malnutrition may occur, secondary to the disease process and associated gastrointestinal, metabolic, immune, pharmacologic and psychosocial sequel. Altered micronutrient metabolism may contribute to oral manifestations and subsequent malnutrition, further compromising oral integrity and the ability to combat infections. Nutrition screening by the dental professional is important. With a particular focus on the integrity of the oral cavity and on medications and their combined impact on oral function. A referral to a registered dietitian is routine in this population for medical nutrition therapy.<sup>27</sup> A carefully taken medical history will not only suggest conditions conducive to nutritional impoverishment but will also divulge the symptoms that may be signals of a developing nutritional deficit. In children these consist of lack of appetite, failure to gain weight, muscular weakness, easy fatigability, insomnia, aversion to play, delays in sitting, standing, walking, and tooth eruption, poor school performance, chronic diarrhea, repeated respiratory infections, and photophobia, lacrimation, and burning of the eyes.<sup>28,29</sup> Multiple symptoms in highly individualistic patterns that may wax and wane are the rule rather than the exception in children with a developing nutritional deficit.

#### Physical Examination

The physical examination has a dual role in establishing the nutritional status. Detection of diseases and conditioning factors that adversely affect nutrition and it discloses the clinical signs or lesions that may be directly significant in the identifications of the deficiency states. Locally, the skin, eyes, mouth, neuromuscular, cardiovascular and skeletal systems are particularly prone to the telltale signs of nutritive failure. Every phase of the physical examination—beginning with height, weight and general appearance and progressing through a systematic inventory of signs by anatomic systems—may contribute to this end.<sup>30</sup>

#### Intraoral and Extra Oral Examination

Intraoral and extra oral physical examination findings, including functional assessment of the cranial nerves, occlusal and dentition status, quality and quantity of saliva, presence of oral lesions or ulcerations, and any infections can have diet and nutrition

implications. Each of the routine components of the dentist's oral examination can be used as part of the nutrition-risk screening process. The nutrition-risk component of an oral examination should identify existing or potential problems at one or more of the following four levels—

1. Oral manifestations of a nutritional disorder.
2. Oral manifestations of a systemic disease that impacts diet and nutritional status.
3. Local oral conditions interfering with ingestion, mastication, swallowing ability, taste, and saliva.
4. Dietary influences on the oral cavity and their contribution to oral diseases.

Oral ulcerations may be due to nutrient deficiencies and, depending on their location and size, they may severely impact a patient's eating comfort and ability. Findings must be evaluated in light of patient subjective reports, medical history and the existing or potential effect on patient ability to eat and subsequent nutrition risk. The clinician must examine symptoms to determine the cause so that the symptom in addition to the precipitating disease or etiology is treated.<sup>31</sup>

#### Diet History

Patients with difficulties biting, chewing, or swallowing may be at risk depending on the presence of other risk factors and the duration and severity of the problem.<sup>15,9,23,24</sup> Referral for medical nutrition therapy by a registered dietitian may be indicated in order to improve patient eating comfort and the quality of their diet. In rare circumstances, enteral tube feeding may be indicated when patients cannot or will not consume an adequate oral diet.<sup>3</sup> Patients should be carefully questioned as to changes in their usual diet and their ability (including pain) to taste, bite, chew and swallow individual foods.

The diet history provides an insight into the food consumption and food habit patterns of the child. Ideally, the history should be taken by an examiner familiar with the dietary preferences and practices of the area and adept in the collection and calculation of dietary data. Food intake is best measured from qualitative and quantitative compilations of all food and drink taken by the child for at least 1 week during each season of the year. The nutritive value of the diet is determined from tables of food compositions and compared with the recommended daily dietary allowances for those nutrients for which standards have been adopted by the Food and Nutrition Board of the National Research. A thorough and discriminating dietary history is a laborious task requiring a high degree of technical skill. At best, the information obtained from the diet survey is an approximation of the

nutritional value of the diet.<sup>34</sup>

#### Conclusion

Eating has a multiple role in our lives we group up and develop because of getting nourishing food and after growth is over, we use food as the energy source for daily activities in addition eating is and has always been a social event and a good meal can be delightful when enjoyed with family. Oral health is considered much more than just having good teeth. It is an essential part of good health and wellbeing.

#### References

1. Text book of pediatric dentistry second edition, Raymond L. Braham.
2. Dentistry for the child and adolescent Ralph E. Mc Donald.
3. D.C.N.A-2003.
4. NUTRITION in clinical dentistry third edition Abraham.E.Nizel.
5. Pediatric dental medicine- Forrester.
6. DCNA 1976.
7. Dental eruption in low birth weight prematurely born children pediatric dentistry 1988;10:39-42.
8. Delayed primary tooth eruption in premature infant's relation ship to neonatal factors pediatric dentistry 16:23-7:1994.
9. Current issues in nutrition and child oral health-int j ped dent; 2001; 11:1-2.
10. Nutritional impact in oral health promotion-Oral health pre dent 2003; 1; 385-402.
11. Dietary supplements and oral health: should the dentist ask- Quintessence inter 2005; 36: 287-92.
12. Translating the new dietary guidelines; JADA; 2006; 137; 1258-60.
13. Nutrition and oral health; gene dent; 2001; 576-82z.
14. Nutrition and inflammatory marker; JADA; 2007; 138; 70-3.
15. The life time impact of sugar excess and nutrient depletion on oral health- gener dent; 2002; 591-595.
16. Mineral status of skeleton and advanced periodontal diseases- J Clin Periodontol 1994; 21; 184-8.
17. Dental diseases in children with diabetes mellitus- J periodontal 1975; 241-5.
18. Diet and oral health; JADA; 109; 21-32.
19. Cariogenicity of soft drinks in the united states; JADA; 1984; 109; 241-245.
20. Parotid enlargement due to alcoholism JADA- 1971; 299-373.
21. Oral food clearance and the ph of saliva JADA; 1986; 112; 333-7.
22. Nutrition and oral health; Quintessence international: 27-31:2007.
23. Dietary vitamin C and risk for periodontal diseases- J periodontal; 71; 1215-23.
24. Salivary flow and dental caries in Indian children suffering from chronic malnutrition: caries research 1992; 26: 38-43.
25. Influence of milk, lactose-reduced milk, and lactose on caries in desalivated rats; caries research 1991; 25: 283-286.
26. Fluoride, beverages and dental caries in primary dentition: caries research 2003; 37: 157-165.
27. How can the dentist separate fact from fiction in nutrition as to what is reliable information and how can provide it: JADA; 109; 21-3: 1984.
28. Early childhood caries a review: dental update; 34: 556-64.
29. Vitamin and mineral supplements JADA; 138: 9: 1226-6.
30. Oral aspects of obesity: IDJ; 57: 249-56: 2007
31. The effect of nutritional status on the age distribution of dental caries in the primary teeth: J dent Res; 69: 9: 1564-66.
32. Mal nutrition and dental caries, caries research 39: 441-7: 20005.
33. Effect of undernutrition during the perinatal period on caries development in the rats: J dent res 49: 1091-9: 1970.
34. Eating patterns, diet and dental caries: dental update; 34: 295-300.