

Nutrition in Daily Practice

Connecting the Dots of Nutrition,
Inflammation and Optimal Oral Health

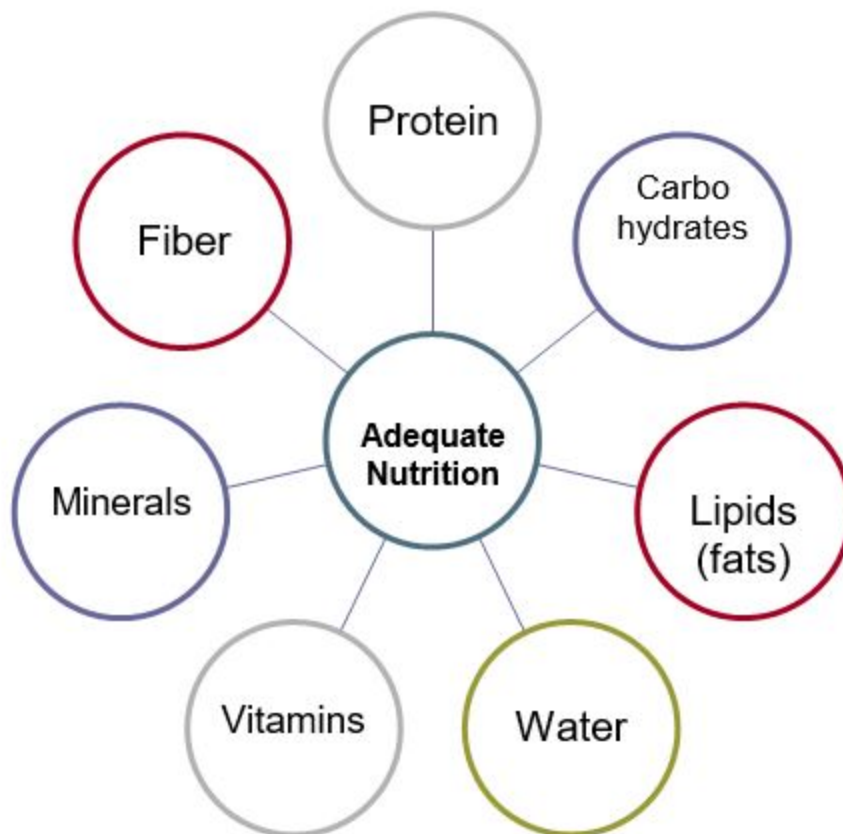


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The effect of nutrition on oral health is receiving increasingly more attention. As health care providers, we recognize the importance of a nutrient based approach in supporting optimal oral and systemic health. Inferior eating habits have a negative impact on immune response, host susceptibility, chronic inflammation and disease progression. A well-nourished host has nutrients to help ward off bacterial assault and infection, maintain tissue integrity, and repair injured tissues not only in the mouth but the entire body. This guide will provide a brief overview of nutritional aspects supporting oral health and can be used as a reference point for individualized discovery.

Adequate nutrition is achieved by the properly balanced intake of these nutrients:

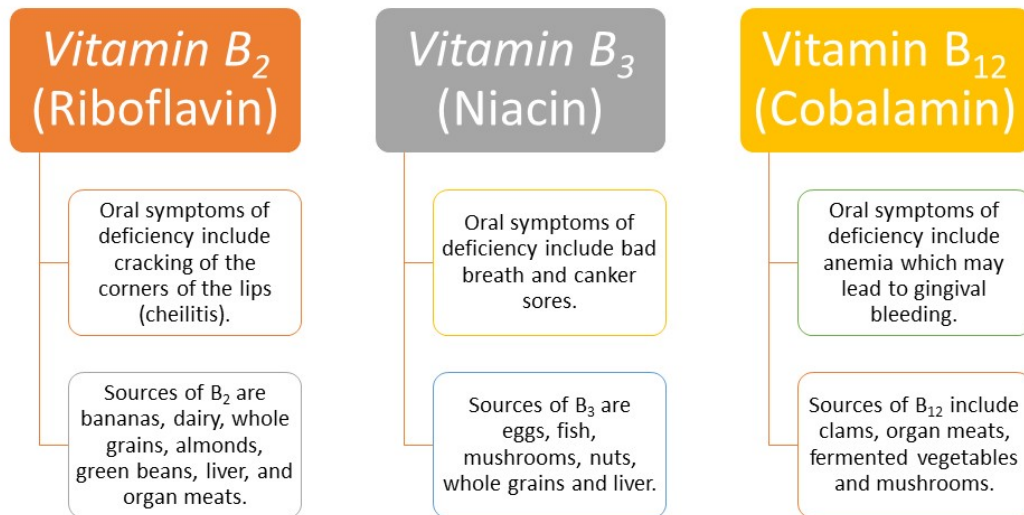


The proper amounts of these nutrients will vary with each individual. Age, present general health, stress levels, pollution, smoking, and medications are only some of the factors that would alter the ration and amounts of nutrients an individual may need. We recommend that you evaluate your own nutritional intake and make sure you are getting these nutrients in your diet or by supplementation.

The following nutrients are especially valuable in the maintenance and healing of your gum and bone.

B Vitamins Play a role in cell metabolism, repair, and proliferation.

Deficiency of B vitamins result in a number of diseases and symptoms. Supplementation may accelerate post-surgical healing.



Vitamin C (with bioflavonoids)

- Required for synthesis of collagen and prevents oxidative damage.
- Studies show supplementation may improve outcomes of periodontal therapy.
- Oral symptoms associated with Vitamin C deficiency are dental caries and bleeding gums with only small amounts of bacteria plaque.
- Sources of Vitamin C are peppers, guava, dark green leafy, broccoli, citrus fruits, berries, papaya and tomatoes.



Vitamin D

- Beneficial effects on oral health are not only limited to the direct effects on the tooth mineralization, but are also exerted through the anti-inflammatory functions and the ability to stimulate the production of anti-microbial peptides.
- Deficiency may lead to delayed post-surgical healing and local application may accelerate post-surgical healing / integration of bone and implants.
- Good sources of Vitamin D are cod liver oil, mushrooms, oily fish, fortified cereals and dairy products.
- Evidence shows that Vitamin D is dependent on vitamin K and to be most effective must be taken together.
 - Vitamin D increases absorption of calcium and Vitamin K directs the calcium to the skeleton and is needed to bind calcium into the bony matrix.



Vitamin E

- Deficiency may impair wound healing.
- Good sources of vitamin E are dark leafy greens, nuts, seeds, avocado, shell fish, fish, plant oils, broccoli and squash.

Vitamin K

- Deficiency may lead to gingival bleeding.
- Good sources of Vitamin K are green vegetables and egg yolk.



Apart from playing a role in cell metabolism, vitamins have potent antioxidant properties. Vitamins A, C, and E have all been observed to modulate the anti-oxidative defense system and have been studied for their potential role in reducing oxidative stress in the oral tissues supporting the teeth. (periodontium)

Dietary minerals and trace elements also play an important role in the maintenance of optimum oral health.

- **Calcium** is commonly the most deficient mineral. Calcium is essential for healthy bones and in the prevention of decay. Supplementation has been found to improve outcomes of non-surgical periodontal therapy, and local application has been found to enhance integration of bone in implant therapy. Recent evidence suggests that taking calcium in isolation without complimentary nutrients like magnesium, vitamin D, and vitamin K can have adverse effects, including the buildup of plaque in coronary arteries and heart attacks. **Calcium intake should be always be balanced out with vitamins D and K, and other minerals crucial to your bone health.** Calcium's dietary sources include milk products, eggs, leafy vegetables, nuts and seeds.
- **Magnesium** is required for cell metabolism and bone formation. Supplementation may improve outcomes of non-surgical periodontal therapy. Magnesium's dietary sources include cocoa, soybeans, nuts, spinach, marine vegetables and tomatoes.
- **Zinc** has an antioxidant effect on the oral tissues and has been found to reduce the severity of diabetes-induced periodontal disease. Dietary sources include protein-rich foods, spinach and grains.

Other important nutritional aspects for oral health include CoQ10 and Omega 3 fatty acids.

- **CoQ10** has a protective and strengthening action in all tissues. Strong in antioxidant properties CoQ10 helps controls oxygen flow within cells, assists with absorption of other nutrients, and boosts immune properties. CoQ10 supplementation is important not only for improvement of periodontal diseases, but also increased body resistance to infections. Individuals with periodontal disease have been shown to be deficient in CoQ10, both locally and systemically. The richest natural sources of dietary coenzyme Q10 are meat, poultry and fish, but vegetarian options, such as beans, nuts, some vegetables, eggs and dairy products, are also helpful for increasing your intake.
- **Omega 3's**, specifically EPA and DHA, are effective in reducing chronic inflammation and may have antibacterial effects on oral pathogens. Two servings of fatty fish should be consumed every week to provide adequate levels of EPA and DHA. If fish is not consumed, a high-quality krill oil supplement (at least 1 capsule per day) provides the level of EPA and DHA that appears to support periodontal health.

Probiotics and prebiotics are also showing substantial health benefits when administered as a dental care solution in the oral cavity.

- **Probiotics** are live microorganisms that are introduced to the human body and are intended to have health benefits. They are often the same or similar to the microorganisms that live naturally within humans.
- **Prebiotics** are not alive, but they are dietary substances that favor the growth of beneficial bacteria over harmful ones. They empower your existing good bacteria (or good bacteria introduced through probiotics) to survive and establish a balanced ration of good-to-bad bacteria using nutrients to influence the oral environment.

PROBIOTICS	PREBIOTICS
Live active microorganisms (bacterial or yeast cultures) that are introduced to the human body from ingested food or supplements	Non-living, non-digestible special form of fiber or carbohydrates.
Healthy bacteria that live naturally within the gut and support the digestive system	Indigestible fiber that serve as food for friendly probiotic microorganisms within the gut. AKA 'insoluble fiber' Can only be metabolized by the gut bacteria, not the human host.
Fight the harmful bacterial species present in the gut	They empower the existing good bacteria to survive and establish a balanced ration of good-to-bad bacteria using nutrients to influence the oral environment.
Naturally found in fermented foods like yogurt, kimchi, and kombucha, miso, etc...	Found in whole wheat and fruits and vegetables like bananas, onions, legumes, garlic, leeks, dandelion greens, etc...

Eating too much of any food will cause imbalances which will lead to disease. We recommend the practice of moderation and trying to avoid the following specific food types.

Foods And Beverages To Avoid:

1. **Foods high in fat** – Excessive amounts of saturated fats may be harmful to the arteries.
- **Foods containing sugar** – Sugar robs the body of essential nutrients to achieve its own metabolism.
- **Sodium** – Excess consumption of sodium is an important cause in hypertension and related diseases.
- **Processed foods** – The processing of foods destroys almost all essential nutrients. Some nutrients are replaced in altered chemical ratios. Most processed foods are high in salt, sugar, fat additives and preservatives.
- ***Foods with chemical additives*** – With accumulative consumption of preservatives and chemical additives, you can allow metabolic breakdown, which leads to disease.
- ***Refined grains*** – Again, the natural process of refining foods depletes their natural fibers, vitamins, and minerals.
- **Caffeine** – Caffeine may affect the nervous system and the digestive process. Coffee also contains phenols, which are catalysts in the formation of nitrosamines or cancer-causing substances. This includes caffeinated and decaffeinated coffee, cola drinks, tea and chocolate.
- **Alcohol** – Alcohol is highly toxic. Besides affecting the nervous system, it depletes the body of needed nutrients. Excessive consumption can cause mineral and vitamin deficiencies and destroy brain cells.

For optimum health, patients should be encouraged to:

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- **Eat nutrient rich fresh foods** – This includes fruits, vegetables, legumes, whole grains, eggs, poultry, and dairy products.
- **Get regular exercise** – Exercise helps determine the amount of oxygen received by your cells.
- **Drink plenty of water** – Recommendation is 8 cups a day, but needs can vary based on many factors such as humidity in your environment, how much you exercise, and how much vegetation you consume.



Every dental healthcare provider knows the impact of sugars on the oral cavity. We often get so focused on the impact sugar has in the caries process that miss the opportunity to educate our patients on sugar's role in total health. **As we focus on nutrition**, it's important to remind ourselves and our patients what impact added sugars and refined carbohydrates have on Oral Systemic Health.

We know the impact of sugar on the immune system is a complex interplay of hormonal, metabolic and immunologic process. We also know that this interplay can severely threaten human health when out of balance with excess added sugars and refined carbohydrates. Some of that impact is immediate, but many of the impacts are cumulative and far-reaching.

Sugar has a bittersweet reputation when it comes to health. Sugar occurs naturally in all foods that contain carbohydrates, such as fruits and vegetables, grains, and dairy. Consuming whole foods that contain natural sugar is okay. Plant foods also have high amounts of fiber, essential minerals, and antioxidants, and dairy foods contain protein and calcium.

Since your body digests these foods slowly, the sugar in them offers a steady supply of energy to your cells. A high intake of fruits, vegetables, and whole grains also has been shown to reduce the risk of chronic diseases, such as diabetes, heart disease, and some cancers.

A large body of research is now available that links high intake of refined carbohydrates and added sugars to many chronic diseases such as heart disease, cancer, diabetes, obesity, liver disease, inflammatory bowel disease, mental decline and arthritis. We now know that Inflammation and oxidative stress play significant roles in each of these disorders. Sugars trigger the inflammatory cascade as well as cause oxidative stress, so the correlation between added sugars and chronic disease is in the details.

Simple messages to add to your Home Care Routine:

- Added sugar, which is removed from its original source and added to foods and drinks, is associated with inflammation.

Natural sugar, which is found in whole foods, is not.

- Replacing foods and drinks high in added sugar and refined carbohydrates may help lower inflammatory markers.
- Including whole foods in your diet can also help fight inflammation.



Remember We Are What We EAT!

These are general guidelines and each individual's nutritional requirements vary. There are many different variables that will affect the needs of each individual such as body chemistry, hereditary factors, physical and emotional stress, medications, environmental pollutions, and previous / current health histories all of which influence individual needs for establishing optimum health. We know that reducing inflammation through a nutrient rich diet supports overall health and learning how specific foods influence the inflammatory process is an important strategy for reducing inflammation and long-term disease risk.

When introducing any new supplement or nutritional program it is important to work in conjunction with a qualified nutritionist or consult a nutrition-oriented physician .