

# Dietary Sources of Vitamins

## Vitamin A

-Beef liver, broccoli, red-orange fruits and vegetables (squash, carrots, apricots, cantaloupe, peaches, papaya, red peppers), dairy products, fortified breakfast cereals

## Vitamin B Complex

- Green leafy vegetables (esp. spinach), soy beans, almonds, walnuts, sunflower and sesame seeds, sprouts, fish, beef liver, fortified breakfast cereals

## Vitamin C

- Citrus fruits, broccoli, cauliflower, cabbage, and brussel sprouts

## Vitamin D

- Fish, fortified dairy products and juices, and eggs

\*Synthesized in body by sunlight



<http://www.netdoctor.co.uk/dietandnutrition/>

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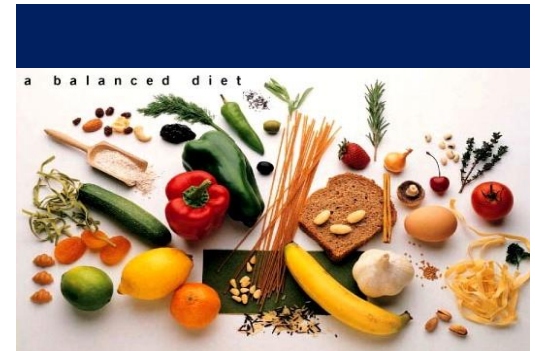
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<http://www.bls.gov/ooh/healthcare/dental-hygienists.htm>

# RECOGNIZING VITAMIN DEFICIENCIES

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## Vitamin functions

**Vitamins** are groups of organic compounds essential for normal growth and function; they must be procured in the diet because they cannot be synthesized by the body

### Vitamin A (fat soluble)

- Builds and maintains healthy mucous membranes and epithelial tissues
- Acts as an antioxidant within cell tissues

**Vitamin B Complex** (comprised of 8 water-soluble vitamins: thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, biotin, folic acid, cobalamin)

- Maintains neurological function and reduces neural tube defects
- Maintains periodontal tissue
- Reduces risk of stroke
- Aids in red blood cell production
- Aids in DNA synthesis

### Vitamin C (water-soluble)

- Maintains bone, blood vessels, skin, scar tissue, tendons, and ligaments
- Repairs and maintains cartilage and teeth

### Vitamin D (fat-soluble)

- Aids the body in using calcium and phosphorus to strengthen bones and teeth
- Aids in preventing hypertension, rheumatoid arthritis, and type II diabetes
- Improves immune function

## Oral Clinical Signs of Vitamin Deficiencies

### Vitamin A

- Gingival inflammation
- Oral candidiasis (yeast infection)
- Impaired taste

### Vitamin B Complex

- *B2 (riboflavin)*: shiny red lips, sore tongue, cracked lips, angular cheilitis, glossitis, hyperemia and edema of oral and pharyngeal mucosa
- *B3 (niacin)*: red/swollen apex of tongue with smooth dry edges, angular cheilitis, mouth pain
- *B6 (pyridoxine)*: sore burning mouth, angular cheilitis, smooth tongue
- *B12 (cobalamin)*: halitosis, angular cheilitis, bright red tongue with/without fissures, xerostomia, numb and bleeding gums

### Vitamin C

- Gingival inflammation with smooth appearance
- Bluish-red gingiva
- Soft, friable gingiva
- Scurvy (bleeding gums, loose teeth, petechial hemorrhage of skin and mucous membranes)
- \*Calculus acts as an irritant

### Vitamin D

- Softens bones and teeth by decreasing density

## Role of the Dental Hygienist

- Utilize the health history interview to establish what vitamin supplements the patient may be taking
- Have the ability to recognize clinical signs of vitamin deficiencies in the oral cavity
- Explain how vitamin deficiencies modify the body's response to dental biofilm and contribute to gingival disease
- Provide patient with diet and nutritional counseling
- During counseling, food-based approaches to diversify diet and increase nutrient intake should be prioritized over vitamin supplementation
- Refer the patient for medical consultation if a serious deficiency is suspected, there may be underlying systemic factors associated



Scurvy displaying in the gingival tissue  
<http://journal.nzma.org.nz/journal/120-1262/2729/>



Displaying Oral Candidiasis with Angular Cheilitis  
[http://www.mycology.adelaide.edu.au/gallery/yeast-like\\_fungi/](http://www.mycology.adelaide.edu.au/gallery/yeast-like_fungi/)