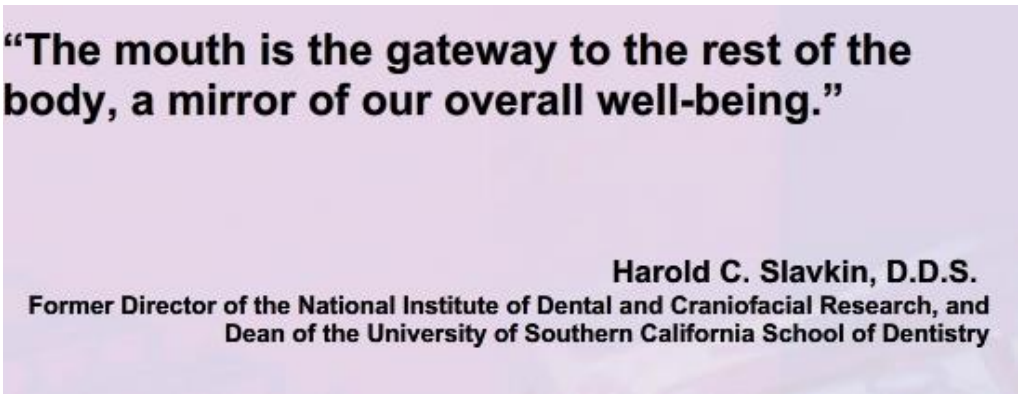
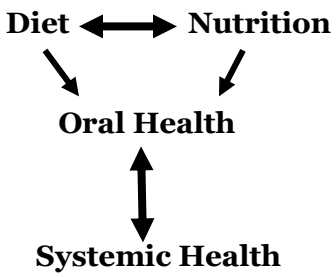
What Does Diet and Nutrition have to do with Dentistry?!

Lisa F. Mallonee, MPH, RDH, RD,LD
Professor, Associate Dean for Faculty Affairs
Texas A&M University School of Dentistry
3302 Gaston Avenue, Room 139B Dallas, Texas 75246
lmallonee@tamu.edu | 214-828-8914

I. Nutrition screening—why should we do it?



II. Oral Manifestations of Nutritional Deficiencies

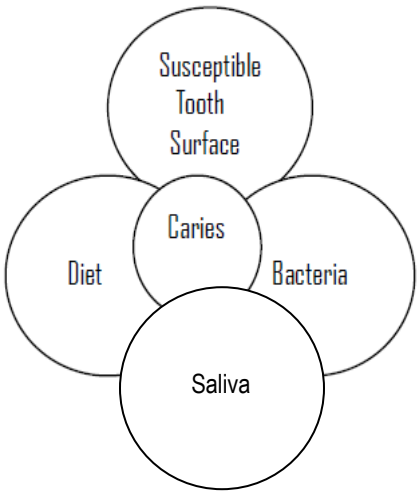


Oral Symptom	Possible Nutrient Deficiency

Glossitis	Niacin, folate, riboflavin, B6, B12
Glossodynia	Niacin, B12, B6
Angular cheilosis	Riboflavin, B6, B12, folate, niacin, iron
Inflamed, bleeding gingiva	Vitamin C, K, B12, niacin, folate
Stomatitis, mucositis	Niacin, folate, thiamin, B12
Xerostomia	Zinc, vitamin A, B12
Sore or burning tongue	Riboflavin, thiamin, niacin, B6, B12, iron
Altered taste	Thiamin, riboflavin, vitamin A, B12, zinc
Increased risk of candidiasis	Folate, vitamin A, K, iron, zinc
Decreased mineralization of teeth; alveolar integrity	Calcium, phosphorus, magnesium, vitamin D
Delayed wound healing	Vitamin A, C, riboflavin, zinc
Altered enamel development	Vitamin A, calcium, phosphorus
Adapted from Palmer, C.A.: Diet and Nutrition in Oral Health, 2003, 2017, pp. 96, 100-101, 117-118, 129-132.	

III. Diet and Dental Caries:

- **For caries to develop, four factors must occur at the same time:**
  - ✓ A susceptible tooth
  - ✓ Diet rich in fermentable carbohydrates
  - ✓ Specific bacteria–lactobacillus; streptococcus mutans
  - ✓ Saliva—quantity and composition



A. Go Back to the Basics with Patient Education:

- **Discuss caries process; don't ASSUME patients understand.**

  Physical Form of CHO: Liquid, solid/retentive OR slow dissolving
  Timing and sequence in meal: During, between or at the end of a meal
  Frequency of intake: How often; minutes of exposure (40 min solid, 20 min liquid)

B. Discuss FOODS to Protect your Smile

1.
2.
3.
4.
5.
6.

Foods and Beverages: Sugar*free* or Sugar*ful*—better or worse?

- ✓ Foods with low- or reduced-calorie sweeteners can have fewer calories than foods made with sugar and other caloric sweeteners.
- ✓ Some sugar-free foods/ products have more calories than, and may have more fat than, the sugar sweetened versions.
- ✓ When you're considering foods with low- or reduced-calorie sweeteners, READ THE NUTRITION FACTS LABEL.
- ✓ Compare calories in sugar-free vs. regular version, to see if calories are actually less.
- ✓ Pay attention to fat content on food labels of sugar free products.

OLD LABEL **NEW LABEL**

Nutrition Facts

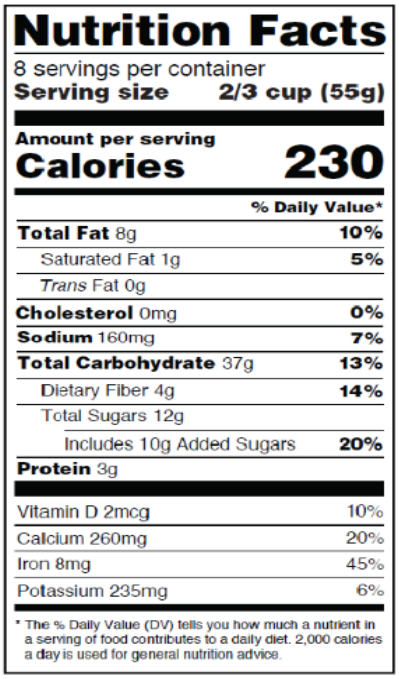
Serving Size 2/3 cup (55g)
Servings Per Container About 8

Amount Per Serving

Calories 230	Calories from Fat 72
	% Daily Value*
Total Fat 8g	**12%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**12%**
Dietary Fiber 4g	**16%**
Sugars 1g	
Protein 3g	
Vitamin A	10%
Vitamin C	8%
Calcium	20%
Iron	45%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g



Nutrition Facts

8 servings per container
Serving size **2/3 cup (55g)**

Amount per serving
Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Talk about the Elephant in the Room: Sugar Sweetened Beverage Consumption

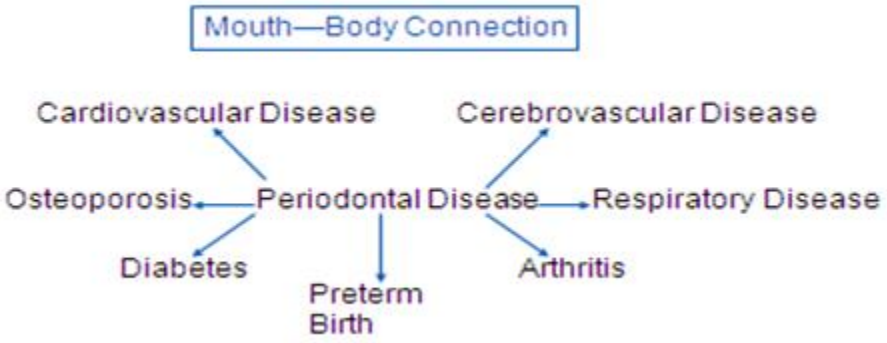
12 oz can of non-diet beverage (10 tsp. of sugar) ~140 calories; one a day=15 lbs

20 oz can of non-diet beverage (17 tsp. of sugar) ~250 calories; one a day= 24 lbs

64 oz "Big Gulp" of non-diet beverage (52 tsp of sugar) ~800 calories; one a day= 83 lbs

NOTES:

III. Diet, Nutrition and Oral Systemic Disease



❖ Inflammation and Oral Health

Anti-Inflammatory Diet
• Fresh, minimally processed foods • Rich in antioxidants • Omega 3 fatty acids • Fiber rich • Probiotics • Season with herbs and spices • Encourage patient to make MD aware of inflammation **Nutritional insults do NOT cause periodontal disease; however, they may increase

❖ Cardiovascular Disease

❖ Diabetes

❖ Xerostomia

Xerostomia **Influence on Nutrient Intake**
• Inability to keep mouth moist • Difficulty in chewing and swallowing • Burning or sensitive oral mucosa • Dry, crusty, smooth, or shiny mucosa • Low tolerance to spicy and acidic foods • ↑ in ulcerations • Food sticks to hard palate, tongue, or removable prosthesis • Altered or lack of taste • Difficulty with use of removable prosthesis • Dry nose—impairing sense of smell

Recommendations for patients with xerostomia:

- Use of products designed to relieve xerostomia
- Lip balm
- Fluids with meals
- Moist foods
- Use of gravies and sauces
- Suck on ice chips between meals
- Tart, sour, and citrus foods and beverages
- Avoid
    - dry, crumbly, sticky, and spicy foods
    - alcohol and commercial rinses containing alcohol
    - tobacco products
    - caffeine
- Frequent sips of fluids with meals
- Use of a humidifier
- Monitor CHO intake
- Products containing sugar alcohol have the potential to be cariogenic

IV. Dietary Supplementation and the dental patient

A. Common Herbals and supplements

1. Ginkgo biloba
2. St. Johns Wort
3. Echinacea
4. Ginseng
5. Saw palmetto
6. Kava
7. Vitamin C

B. Who takes supplements?

C. Recommendations Before Having Dental Surgery, if you use any of these herbal medications stop taking them:

- **Ephedra** at least 24 hours before surgery
- **Garlic** 7 days before surgery
- **Ginkgo** 36 hours before
- **Ginseng** 7 days before surgery
- **Kava** 24 hours before
- **St. John's Wort** 5 days before surger

Obesity and the Role of Dentistry

I. Background on the Globesity epidemic

II. Incorporating Obesity Prevention in Practice

Guidelines for Providing Oral Health Care: What's Your Role?

- Review medical history to determine if client has other systemic diseases that coexist with increased weight that may present risk factors for treatment.
- Note information about meds, supplements or herbal products used for weight management in the dental chart.
- Overweight patients may *still* be malnourished and present with signs of vitamin and mineral deficiencies; be cognizant of abnormalities present during oral exam that suggest deficiency, including glossitis, stomatitis, ulceration, and angular cheilitis. IF any of these signs are present, offer palliative oral health care tips.
- Caries risk management: assess diet to determine intake of carbohydrates—diets high in carbohydrates are associated with overweight and obesity.
- Provide information about the relationship between diet and caries formation, educate about caries control.
- Meticulous oral hygiene and daily fluoride depending on caries status.
- Practically speaking, obese patients may have difficulty breathing when required to lay supine for extended periods of time. Upright position may be more comfortable.
- Stress the need for regular physical activity—but always remind them to visit with a physician prior to beginning a new exercise program.
- Collaborate with a registered dietitian to offer support through nutrition counseling and weight management and to reinforce the effects of healthy eating on oral health.

Fad Diets and Oral Health

- High Protein Diets
- 1-2 Meals Day
- High CH0, low fiber
- Caffeine rich beverage diets
- Avoiding Food Groups

Reference: Mobley C. Fad Diets: Facts for Dental Professionals. J Am Dent Assoc 2008; 139: 48-50.

Bariatric Surgery Patients: What's OUR Role?

- Re-mineralization protocols
- Dental sealants
- Monitor salivary pH
- Educate patients on effective plaque removal and use topical fluorides
- In office application of sensitivity gel or fluoride gel
- Salivary substitutes
- Xylitol for caries prevention—may be contraindicated for GERD pts.

Reference: Duley SL and Fitzpatrick PG. The Bariatric Treatment Team. Dimensions of Dental Hygiene. November 2006: 14-16.
Silverman C, Raisberg F, Willis S. Treating Patients After Weight Loss surgery. Dimensions of Dental Hygiene. 2013; 11(2):52-55.
Moravec JL, Boyd LD. Bariatric Surgery and Implications for Oral Health: A Case Report. JDH . 2011; 85(3), 166-176.
Barbosa CS, Barbério GS, Marques VR, et al. Dental Manifestations in bariatric patients—a review of the literature. J Appl Oral Sci. 2009; 17 (sp. Issue): 1-4.

Incorporating Nutrition education in practice---- What's the role of the dental professional?

Partnering with Registered Dietitians in Practice

- ✓ Locate a dietitian on the Academy of Nutrition and Dietetics website: http://eatright.org
- ✓ Academy of Nutrition and Dietetics Position Paper on Oral Health and Nutrition. Available at: https://jandonline.org/article/S2212-2672(13)00236-0/pdf (accessed 4/12/22)
- ✓ Include nutrition and oral health in your study club topics; find an RD to jointly present with dentist or dental hygienist

Practical Nutrition Tips for the Dental Professional

- Limit between meal snacks
- Eat cariogenic foods *during* meals
- Include whole grains, veggies, fruits & lowfat dairy as snacks.
- Encourage nutrient-dense, fortified, or enriched foods
- Monitor timing and frequency of simple & retentive CHOs, such as:
  - Crackers, breads, cereals
  - Pretzels and chips
  - Peanut butter (processed not natural)
  - Diet and regular sodas; sports drinks, energy drinks, flavored water
  - Dried fruit
  - 100% fruit juice, juice bars and frequent juicing with fruits/vegetables
  - Fruit smoothies
- Limit sodas to one 8 or 12-oz can per day
- Select cans over re-sealable bottles.
- Recommend the use of a straw positioned toward the back of the mouth.
- Recommendations following snacks w/CHOs
  - ✓ Chew gum with xylitol
  - ✓ Rinse with water
  - ✓ Brush teeth

- Firm, fibrous foods stimulate salivary flow
- Suggest appropriate use of fluorides & meticulous daily plaque removal
- Encourage regular dental check-up appointment

NOTES:

Circle the number in the "Yes" column for all positive answers	*YES*
1. Do you have any illness or condition (i.e. food allergy) that has made you change the kind and/or amount of food you eat? (Referral to MD or RD)	**2**
2. Are you on a special diet?	**2**
3. Do you avoid eating one or more food groups (meat, dairy, fruit, veggies, bread/ cereal)?	**2**
4. Do you have 2 or more drinks of beer, liquor or wine daily?	**2**
5. Do you use tobacco products daily?	**1**
6. Do you have tooth pain or mouth sores that make it hard to eat or make you avoid certain foods?	**2**
7. Do you drink sugar sweetened beverages (coffee, tea, soda, flavored juice) OR diet sodas 2 or more times a day between meals?	**2**
8. Do you snack in between meals (on foods other than fresh fruits and vegetables)?	**2**
9. Did you have 3 or more new cavities at your last dental checkup OR at your present checkup?	**2**
10. Do you have a dry mouth which causes you to drink something other than water OR use gum, hard candy, cough drops, or mints to moisten your mouth 2 or more times per day?	**2**
11. Do you take 3 or more different prescription, over the counter meds OR vitamins, minerals, herbals, dietary supplements daily?	**1**
12. Without wanting to, have you lost or gained 10 pounds in the last 6 months? (Referral to MD or RD)	**2**
TOTAL	

Total Points	**Nutritional Risk Level**	**Intervention**
0-2	Low	Recheck nutritional score in 6 months
3-5	Moderate	Continue with nutrition assessment (24 hr recall/5day food record)
6 or more	High	Continue with nutrition assessment; consider need for referral to physician and/or a registered dietitian.

Circle appropriate answer

1.	Does patient have moderate to severe periodontitis?	YES*	NO
2.	Would this patient benefit from a 24 hour recall and/or 5 day food record to determine an inadequate and/or cariogenic diet?	YES*	NO
3.	Does the patient have complicated medical and nutrition needs?	YES**	NO

* IF the answer is YES to question #1 or #2, general nutrition education for a healthy, low cariogenic diet is recommended.

** IF the answer is YES to question #3, patient should be referred to a physician or registered dietitian for further assessment.

The RDH and/or DDS have informed me of my risk factors for oral diseases and the preventive services that are available to reduce the risk.

Patient signature: _____ Date: _____

Adapted from The Nutrition Screening Initiative, a project of the AAFP, ADA & NCOA, Washington, D.C. 1992.

Diet and Your Teeth

Frequent eating or drinking of sugar containing food is a major risk factor for developing dental caries (tooth decay).

Do you have a dry mouth?	Yes	No
Do you chew gum? If yes what type?	Yes	No
Do you suck on hard candy, cough drops, etc.?	Yes	No

A	B	C
Circle foods eaten regularly? (> 1 time/week)	**How many of the circled foods do you eat each day?**	**Multiply the column "B" by column "C". Record the total at the bottom.**
LIQUID Soft drinks, fruit drinks, cocoa, sugar or honey in beverages, non-dairy creamers, ice cream, sherbert, jello, flavored yogurt, pudding, custards,popsicles		x1=
SOLID/STICKY Cake, cupcakes, donuts, sweet rolls, pastry, canned fruit in syrup, bananas, cookies, chocolate candy, caramel, toffee, jelly beans, other chewy candy, gum, dried fruit, jelly, jam, marshmallows.		x2=
DISSOLVING Hard candies, breath mints, antacid tablets, cough drops		x3=
TOTAL		

Caries Risk Score

0-1	2-4	5-7	8-9	>9
Low		Moderate		High

Points to keep in mind to lower your risk for caries:

Cut down on the frequency of between meal sweets

Don't sip constantly on sweetened beverages.

Avoid using slowly dissolving items like hard candy, cough drops, or breath mints.

Eat more non-decay promoting foods such as low-fat cheese, raw vegetables, crunchy fruits, popcorn, nuts, artificially sweetened beverages and natural spring waters.

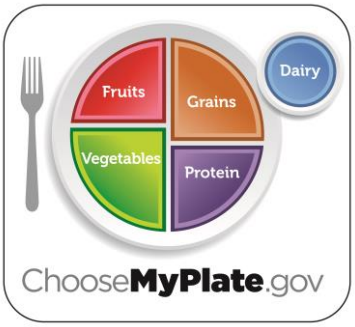
Promote good oral health and overall health; eat adequate amounts from each of the food groups.

What do you eat in a typical day?

List all the foods including snacks and beverages that you eat in a typical day. Give your best estimate of amounts and times consumed.

Time of Day	Foods eaten	Amount

How does your plate rate?



Grains: 1 2 3 4 5 6 7 8 9 10 11

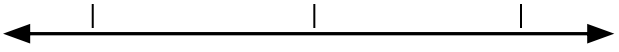
Vegetables: 1 2 3 4 5

Fruits: 1 2 3 4 5

Dairy: 1 2 3

Meat & Beans: 1 2 3 4 5 6

Refer to Food Guide Pyramid Choosemyplate.gov to determine individual requirements. Consumption below the lowest recommended servings in any of the food groups may indicate essential nutrients are missing in the diet. Plot risk below:



Low in 0 Groups	Low in 1-2 Groups	Low in 3 Groups
Low Risk	Moderate Risk	High Risk

Resources for Practice**

Stegeman C and Davis J. The Dental Hygienists Guide to Nutrition Care, 5th Ed. St. Louis: Saunders Elsevier. 2017

Palmer CA, Boyd LD. Diet and Nutrition in Oral Health, 3rd Ed. New Jersey: Prentice Hall. 2017

Primary Health Care in the Dental Office. Dental Clinics of North America. 2012. 56 (4): 699-884.

Harper Mallonee LF. Nutrition Counseling. In: Darby, M. *Dental Hygiene: Theory and Practice.* 3rd Ed. St Louis: Saunders Elsevier; pp. 607-626, 2015.

Touger Decker R, Mobley C. From the Academy: Position of the Academy of Nutrition and Dietetics (AND): Oral health and Nutrition. *J Acad Nutr Diet.* 2013; 113(5): 693-701.

Harper Mallonee L, Boyd L, Stegeman C. From the Academy: Practice Paper of the Academy of Nutrition and Dietetics (AND) : Oral Health and Nutrition. Full manuscript access available via (AND) for purchase. *J Acad Nutr Diet.* 2014; 114: 958.

Harper-Mallonee LF. The Scope of Nutritional Counseling in the Dental Practice Setting. *Contemporary Oral Hygiene*. 2006; 6(8): 20-27.

***Pdf copies of articles I have authored can be provided upon request**