3-4-81 ZDM

FACT SHEET

L-1806

DENTAL CARIES AND NUTRITION

Mary K. Sweeten, R.D., M.S.*

Dental caries (decay), the most common of all human diseases, affects people throughout the world. The incidence of dental decay (caries) is closely related to certain carbohydrate foods in the diet. Bacteria and tooth structure are other conditions that lead to the formation of tooth decay.

Formation of Tooth Decay

Carbohydrates serve as a source of food for the bacteria present in the mouth that form a film on the teeth known as plaque. The bacteria or germs in plaque break down sticky foods, such as sugar, to form an acid. This process begins in 10 seconds and lasts up to 30 minutes or longer after each meal or snack. The acid attacks the tooth enamel, leading to tooth decay. The more often the teeth are exposed to food-derived acid, the longer the total action of the acid and the greater the amount of tooth decay.

Sugar in the Diet

The average American eats about 130 pounds of sugar and sweeteners each year. These sweet foods, especially the sticky ones, are a major cause of dental cavities. Sugar-containing foods such as jams, jellies, candies, cookies, soft drinks, cakes, pies, sweetened breakfast cereals, catsup and ice cream eaten between meals, or hard candies held in the mouth for long periods of time, are worse for the teeth than these same foods eaten with meals. The risk of developing caries increases the more often you eat sugar and sweets, especially if they stick to the teeth. Frequent snacks of sticky products such as caramels or dates or day-long consumption of soft drinks is probably more harmful than adding sugar to coffee or tea. The total amount of sugar eaten is not as important in the development of dental caries as how often, how long and what form of sugary foods are consumed and whether or not teeth are brushed and flossed after each meal.

Minerals for Healthy Teeth

Certain minerals are necessary in the diet to help in the formation of strong teeth and bones. Calcium, the main mineral for this function, is found mostly in the milk group foods such as milk, buttermilk, cheese, yogurt and puddings. Adults need two or more servings daily from this food group.

Phosphorus works with calcium in making strong teeth and bones. Phosphorus is abundant in the American diet, especially in the meat group foods. Eat a variety of foods daily with the recommended servings from each group.

Fluorine is also an important mineral for strong bones and teeth because it helps prevent cavities. It is found in seafood and in some plants. In many Texas cities fluoride is added to the drinking water. In addition, many dentists are adding fluoride directly to the teeth or recommending the use of toothpastes containing fluoride.

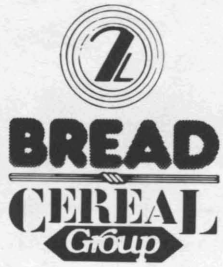
No single food supplies all the nutrients needed for a good diet. Eat a variety of foods daily to insure an adequate diet. Select the recommended serving for each food group to insure that you are consuming the recommended amounts of these minerals. Never take vitamin supplements unless prescribed by your physician. Instead, eat a balanced diet daily.

*Extension foods and nutrition specialist, The Texas A&M University System.

Texas Agricultural Extension Service • The Texas A&M University System • Daniel C. Pfannstiel, Director • College Station, Texas

Balance the Nutrients in the Diet

All the food you eat can be divided into food groups. By knowing what is in each group and by knowing how much to eat, you can make sure you are getting a balanced diet.

	Foods in Group	Servings Daily
	Include four or more servings daily of fruits and/or vegetables. Include citrus fruits daily and deep yellow or dark green vegetables for vitamin A. Unpeeled fruits and vegetables and others with edible seeds provide fiber. One serving equals ½ cup.	4 or more
	Select whole grain and enriched or fortified bread, cereal or pastas. One serving equals one slice of bread or ½ to ¾ cup cooked cereal.	4 or more
	Include milk in any form, cheese, yogurt and cottage cheese. One serving of milk equals 8 ounces.	Children under 9, 2 to 3 servings. Children 9 to 12, 4. Teens, 4. Adults, 2 or more. Pregnant women, 3. Nursing mothers, 4.
	A serving of meat is 2½ to 3 ounces of beef, veal, pork, fish, shellfish, organ meats or substitutes for meat such as dry beans or peas, soybeans, lentils, eggs, seeds, peanuts and peanut butter.	2 or more
	This group includes fats such as butter, margarine or oils, and sugars such as sugar, soft drinks or concentrated sweets.	No amount is suggested. The amount eaten depends on the number of servings you can tolerate calorically.

Snacking

Americans are eating more snack foods. This change in diet pattern may be leading to more dental caries since many snack items are rich in sucrose and other refined carbohydrates. It is what you eat and how often you eat that damages the teeth. You should always brush your teeth after eating foods that contain sugar. Some foods promote tooth decay because bacteria love them. Other foods discourage tooth decay because bacteria snub them. Select your snack foods wisely from the "bacteria snub list" below. Avoid snack foods from the "bacteria love list."

Foods Bacteria Love
(Promote tooth decay)

Sweet, sticky foods such as:
- caramel
- taffy
- frosting
- honey
- jam
- jelly
- molasses
- syrup

Sweet foods such as:
- candy
- cake
- ice cream
- sugar
- cookies

Dried fruits such as:
- prunes
- figs
- dates
- raisins

Sweet rolls and breads

Fruit with sugar

Chewing gum with sugar

Foods Bacteria Snub
(Do not promote tooth decay)

Raw, unsweetened vegetables and fruits such as:
- apples
- pears
- oranges
- carrots
- celery
- lettuce
- cabbage
- cauliflower

Other unsweetened foods such as:
- cooked vegetables and fruits
- milk and cheese
- meat, fish, poultry, eggs, beans and nuts
- breads and cereals, especially whole grain
- unsweetened beverages such as coffee, tea and fruit juices

Other items such as:
- sugarless chewing gum
- sugarless soft drinks

Choices for Better Dental Health

Cut down or cut out the number of times you eat foods bacteria love. If you do eat these foods, it is wiser to eat them only at mealtime and to brush teeth well right after eating. If this is not possible, at least swish the mouth clean with water or eat a raw fruit or vegetable. Use dental floss daily.

Use foods bacteria snub in place of foods bacteria love.

Remember — don't feed the bacteria!

References

"Dietary Factors in Dental Decay." *Nutrition and the M.D.* Vol. 2, No. 12.

Dreizen, Samuel, D.D.S., M.D., "Nutritional Aspects of Dental Care." Paper presented at Nutrition Today Workshop, March 1978.

Hennon, D. K., G. K. Stookey, and B. B. Beiswanger. "Fluoride — Vitamin Supplements: Effects on Dental Caries and Fluorine When Used in Areas with Suboptimum Fluoride in the Water Supply." *A.D.A.*, Vol. 95, November 1977.

Madsen, K. O. "The Frequency of Eating and Dental Health." National Livestock and Meat Board, Vol. 46. March 1975.

Nutrition and Health: Dietary Guidelines for Americans. U.S. Department of Agriculture and U.S. Department of Health, Education and Welfare, 1980.

Nutrition in Tooth Formation and Dental Caries. Council on Foods and Nutrition, American Medical Association, 1972.

What's to Eat? The United States Department of Agriculture Yearbook, 1979.

Acknowledgment

Special appreciation is extended to Samuel Dreizen, D.D.S., M.D., Head of Department of Dental Oncology, University of Texas Health Center, Houston, Texas. Appreciation also is extended to Marilyn Haggard, Rose Tindell Postel, and Cass Ryan-Crowe, Extension foods and nutrition specialists, and Mary Ann Shirer, Extension health education specialist, Texas Agricultural Extension Service, The Texas A&M University System.

Educational programs conducted by the Texas Agricultural Extension Service serve people of all ages regardless of socioeconomic level, race, color, sex, religion or national origin.

Cooperative Extension Work in Agriculture and Home Economics, The Texas A&M University System and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8, 1914, as amended, and June 30, 1914.
20M—2-81

F&N 6