

How Traditional Diets Can Support Strong Teeth

Ellen Karlin, MMSc,RDN,LDN,FADA

Sara Karlin, DDS

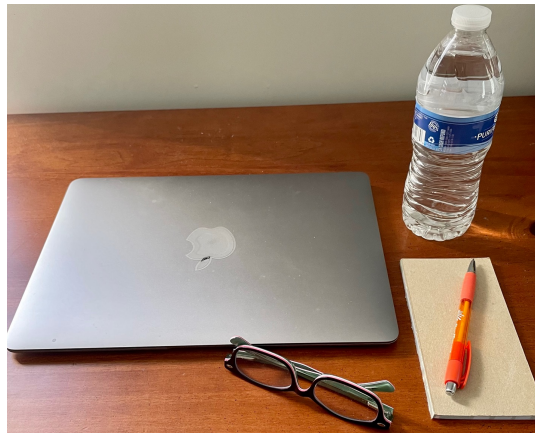
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Objectives

- Identify traditional dietary patterns, cooking and eating styles
- Discuss the synergy between whole-food traditional diets, nutrition and the integrity of the oral cavity
- Learn about the growing body of research supporting the benefits of traditional diets for optimal oral health and strong teeth



Traditional Foods: You Are What you Eat!

- Definition
 - Originate from local plant or animal resources that can be harvested from the land and sourced through hunting, fishing, gathering
- High in nutrient-density
 - Wild game, fish
 - Fruits and vegetables
 - Nuts and seeds
 - Whole grains
- Benefit the oral cavity



Traditional Dietary Patterns

- Food Culture
 - More than just simply fuel for the body
 - Practices, beliefs, emotions, memories, attitudes around food
 - Passed down from generation to generation
- Provide sense of spiritual well-being
 - Rituals, symbolism, personal connection
 - Comfort, connection, security

Traditional Cooking and Eating Styles

- Delicious
- Healthful
- Nutrient-dense
- Environmentally friendly
- Sustainable
- Reflect core lifestyle habits
- Inspired by cultural, culinary, agricultural traditions
- Meals are social, leisurely, enjoyable

<https://oldwayspt.org/traditional-diets/why-traditional-diets>

Regional, Traditional, Heritage Diets

- Based upon regional, locally sourced, planet-friendly seasonal crops
 - Mediterranean
 - Persian
 - Nordic
 - Asian Heritage
 - African Heritage
 - Latin American
 - Native American
 - Southeast Asian

Mediterranean and Asian Diets

- Based upon local and regional traditions and foods naturally found in the region
- Meet definition of healthy dietary pattern
 - Rich in health-promoting foods
 - Low in saturated and trans fat, processed animal products, added sugars, refined foods



Japanese Traditional Diet

- Washoku – Japanese traditional diet practices
- Flavor of food has umami taste
- Genetically-based individual differences in taste perception influence food selection
- Healthy dietary pattern associated with longevity, lower morbidity and mortality

Traditional Diets = Healthful Diets

- WHO dietary recommendations for health
- All dietary targets recommended by WHO naturally occur in regional diets
 - Watch caloric intake
 - Shift away from sugar, salt, saturated and trans fat
 - Shift toward healthy fat, fruit, vegetables



Food Synergy

Food Synergy

- “In recent years researchers, public health experts and RDs have acknowledged that nutrients and foods are not consumed in isolation. Rather, people consume them in various combinations over time-a dietary pattern-and these foods and beverages act synergistically to affect health.” DGA
- Nutrients found in whole food matrix
 - Act synergistically
 - Their combined actions work together
 - Optimal nutrient absorption

Concept of Food Synergy

- Consume a balanced diet - includes a variety of whole foods in order to maximize health benefits
- Nutrient-dense foods contain unique mix of vitamins, minerals, antioxidants, compounds
- When we combine different foods together, research suggests that certain nutrients are beneficial together
- Goal – eat a healthy well-balanced diet instead of seeking out specific nutrients



Traditional Diet in Nepal

- Cross-sectional study published in the International Journal of Environmental Research and Public Health
 - Looked at diet, nutritional status and oral health
 - N = 273 Nepali children ages 6 months-12 years
 - Traditional diet in Nepal includes rice, lentils, vegetables (Dahl Bhat)
 - Traditional snacks: corn, popped corn, roasted soybeans; foods made from locally grown wheat and millet grains

Swapping Out Traditional Grains

- Children in Nepal are currently consuming “sweets, processed snacks, sugar-sweetened tea, other sugar sweetened beverages (SSBs) on a daily basis... a daily staple of the diet for many children”
- Increased intake of sugar consumption was associated with childhood malnutrition
 - Malnutrition defined by WHO criteria
 - 20% of the children had stunted growth, 14% underweight and 6% wasted
- Severe caries was associated with acute malnutrition in all ages and with chronic malnutrition in older children
- “The association between severe caries and malnutrition underscores the importance of caries prevention and early intervention” for optimal oral health, optimal nutritional status and optimal growth and development.

Food Synergy Promotes Oral Health

- Better absorption and bioavailability of nutrients when eaten together
- Antioxidant compounds found in plants work together to protect against oxidative stress and inflammation in mouth
- Dietary fibers from whole foods improve gut and oral health
- Diverse, whole foods improves satiety; reduces sugar cravings
- Complete proteins with all essential amino acids
 - Building block for bone, periodontium
 - Tissue repair
 - Immune function
 - Wound healing

How to Practice Food Synergy

- Focus on varied, diverse, well balanced dietary pattern
- Eat foods from all food groups to help ensure you are getting a range of essential nutrients
- Combine plant-based proteins
- Eat healthy fats with fat-soluble vitamins for proper absorption
- Avoid ultra-processed and refined foods

Food Synergistic Pairings

- Beans and rice
- Kale and citrus salad dressing
- Black pepper and turmeric
- Salmon and sweet potatoes
- Salmon and spinach
- Tomato and avocado



Dried Fruits are Part of Traditional Diets

- Dried fruit was used in ancient cultures to preserve fruit
- Energy-dense
- Found in pilafs, grain salads, stews, oatmeal, porridge, whole grain baked goods
- Naturally sweet, reducing the need for added sugar, benefiting oral health
- Food synergy



Essential Nutrients Work Together Synergistically to Benefit Oral Health

- High biological value protein
- Pantothenic acid
- Vitamins A, D, B12
- Riboflavin
- Niacin
- Phosphorus
- Potassium
- Zinc
- Selenium
- Calcium
- Iodine



Photo by Kim Gorga

Dairy Matrix: Food Synergy

- 90% Americans do not meet dairy recommendations
- Milk and cheese are anticariogenic
- Calcium, vitamin D, phosphorus, casein
 - Casein from milk and cheese in saliva bind with hydroxyapatite to prevent adhesion of *Streptococcus mutans*
- Probiotic-rich dairy benefits oral health
 - Yogurt has been shown to decrease *S. mutans* in dental plaque



Growing Body of Research

Nordic Diet or Scandinavian Diet

- Mostly locally sourced fruits (berries), vegetables and seafood
- Similar to the Mediterranean diet
 - Legumes
 - Seasonal fruits
 - Seasonal veggies
 - Fatty fish
 - Whole grains
 - Healthy anti-inflammatory oils
 - Low-fat yogurt

Connection: Maternal Obesity and Child's Caries Risk

- Data from the Norwegian Mother and Child Cohort Study
- “Children with an obese mother or one whose diet was rich in sugar and fat early in pregnancy” were at higher risk of developing caries at age 5
 - Child with obese mother had 2.3 times higher risk of caries development
 - When mom consumed more sugar or fat than recommended, child had 1.5 and 1.6 times higher risk



Western Diet: High in Ultra-Processed Food

- Manufactured foods containing many additives
- Account for 60% of food eaten in U.S.
- UPF foods are linked to
 - Caries
 - Overweight
 - Obesity
 - CVD
 - Cerebrovascular disease
 - Depression



Dental Caries: Non-Communicable Disease

- Environmental factors
- Poor diet disrupts biofilm leading to dysbiosis and lesion initiation and progression
- Characteristics of NCDs
 - Slow progression
 - Long duration
 - Not transmissible from person-to-person
 - Strong correlation to modifiable risk factors
 - Diet
 - Biofilm
 - Saliva



High Sugar Intake May Promote Inflammation

- Diet is strong modulator of gut microbiome and related mucosal immune responses
- Research using mice found that when healthy mice were fed a diet rich in added simple sugars –
 - Increased intestinal permeability
 - Increased severity of chronic colitis
 - Changed composition of gut microbiota
- Results suggest: High sugar diet disrupts intestinal barrier integrity, resulting in systemic low-grade inflammation

Does your patient have a “sweet tooth”?

- Hit that “sweet spot” without added sugar
- Provide nutrients and synergy for healthy teeth
 - Celery, peanut nut butter, dark choc chips
 - Banana, seed butter, dark choc chips, cinnamon
 - Strawberry, seed butter, dark choc chips
 - Low sugar yogurt, fruit, dark choc chips
 - Dark chocolate topped rice cakes
 - Berries, unsweetened cereal

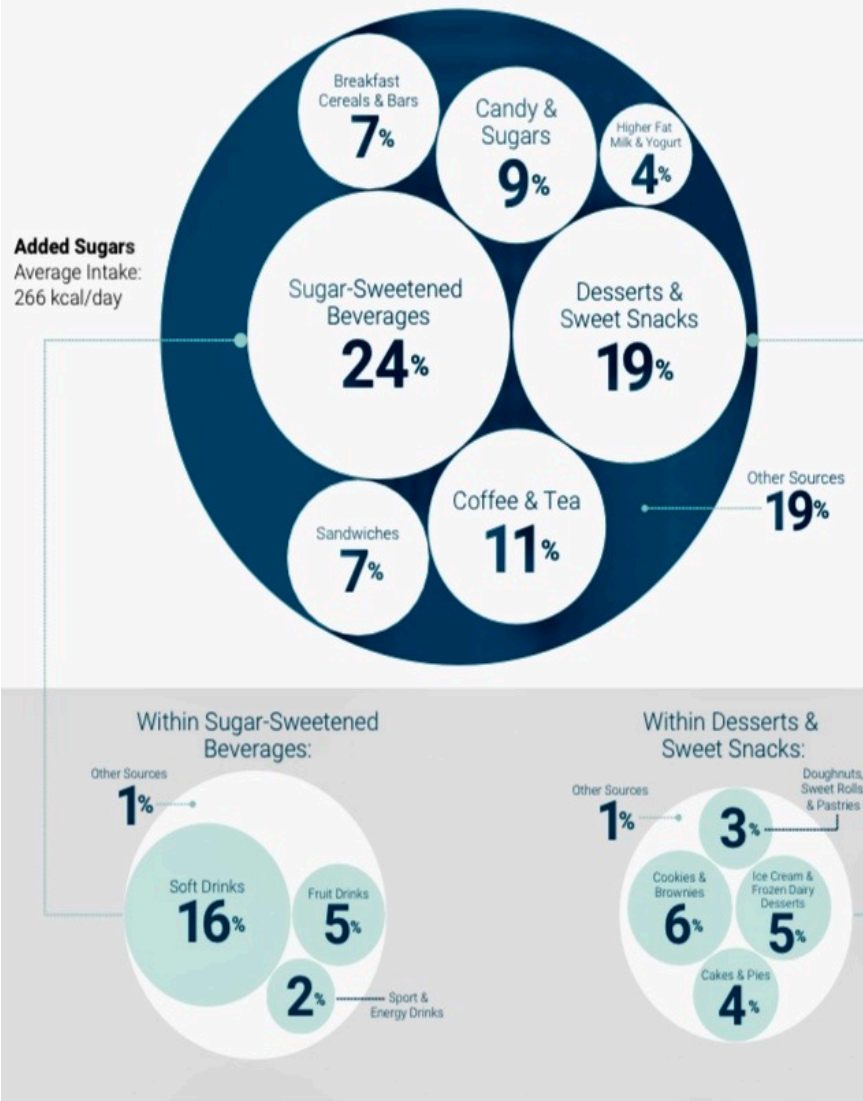


Added Sugars in Diet

- Contribute to caries and weight gain
- Limit added sugar intake to < 10% of your calorie intake
- Examples
 - Brown sugar, table sugar, corn syrup, beet sugar, maple syrup, turbinado sugar, coconut sugar, agave nectar, molasses, honey, date sugar, cassava sugar...

Figure 1-10

Top Sources and Average Intakes of Added Sugars: U.S. Population Ages 1 and Older



Data Source: Analysis of What We Eat in America, NHANES, 2013-2016, ages 1 and older, 2 days dietary intake data, weighted.

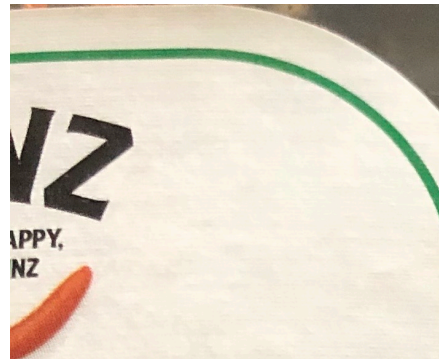
Other Sources of Added Sugars

- Breakfast cereals
- Granola bars
- Yogurt
- Applesauce
- Peanut butter
- Crackers
- Breads
- Salad dressing
- Sauces
- Ketchup



Old Nutrition Facts Label

New Nutrition Facts Label



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 sults, refrigerate after opening.

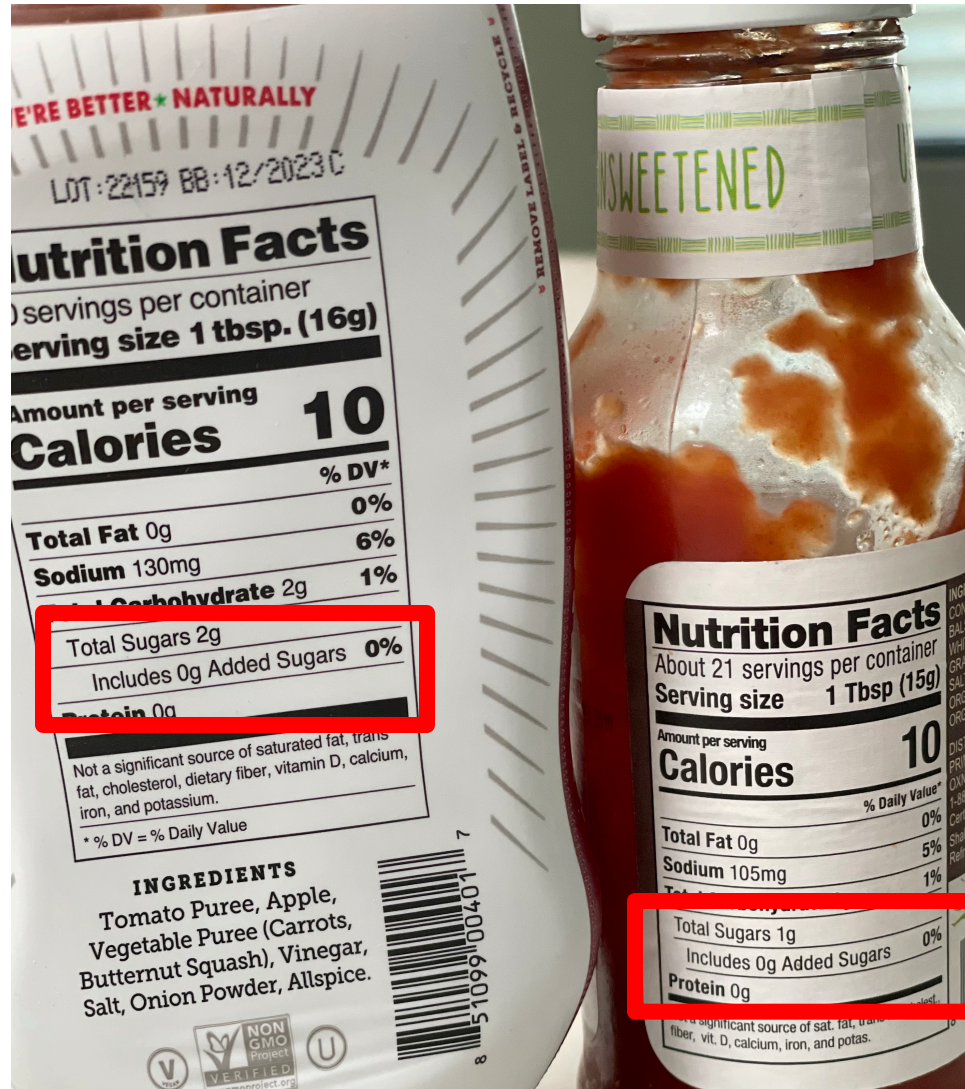
DV*	Amount/serving	%DV*
100%	Total Carb. 5g	2%
0%	Dietary Fiber 0g	0%
0%	Sugars 4g	
0%	Protein 0g	

n C 2% • Calcium 0% • Iron 0%

For over 150 years, only [redacted] has made
 the thick, rich ketchup America loves from only
 the best red-ripe tomatoes.

Nutrition Facts		Amount/serving	% DV	Amount/serving	% DV
Total Fat		0g	0%	Total Carb.	5g 2%
Sat. Fat		0g	0%	Fiber	0g 0%
Trans Fat		0g		Total Sugars	4g
Cholest.		0mg	0%	Incl. 4g Added Sugars 7%	
Sodium		180mg	8%	Protein	0g
Calories per serving	20	Vit. D 0% • Calcium 0% • Iron 0% • Potas. 0%			

Encourage Condiments Without Added Sugar



Sugar-Sweetened Beverages Contribute to Caries

- Study design
 - Systematic review and meta-analysis of 38 cross-sectional studies
- Target population
 - General population (children, adolescents and adults)
- Results
 - Positive association (first study to show a dose-response gradient) between SSB consumption and caries
- Message
 - Consumption of SSB daily or several times a week increases dental caries and erosion risk



It is Difficult to Identify Added Sugar in Drinks

- Cross-sectional study
- Target population
 - U.S. parents of children age 1-5
- Results
 - Parents are not able to recognize added sugars
 - Or non-nutritive sweeteners in beverages
 - Acesulfame K
 - Allulose
 - Monk fruit
 - Neotame
 - Saccharin
 - Stevia
 - Sucralose
 - Tagatose



Photo used with permission from "Sugar Association's Campaign for Sweetener Transparency."










Healthy Beverage Consumption in Early Childhood

Recommendations from Key National Health
and Nutrition Organizations

**Healthy Eating
Research**

September 2019

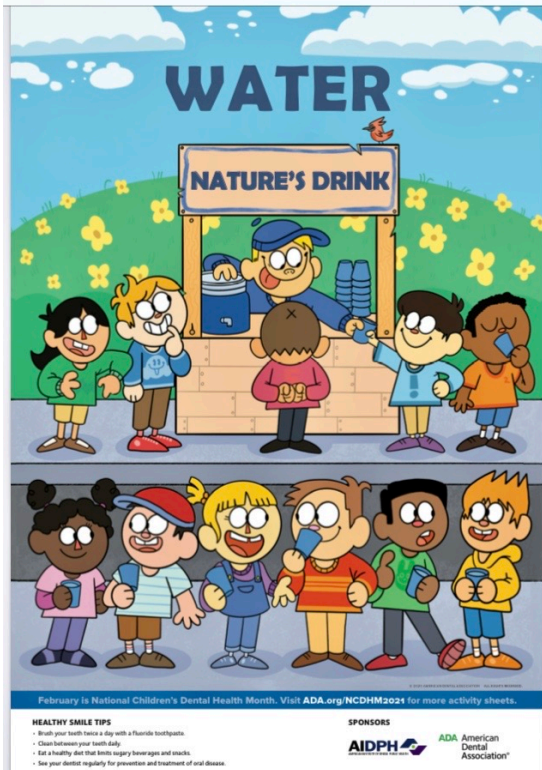
SUMMARY OF KEY PANEL FINDINGS AND RECOMMENDATIONS

	0-6 months	6-12 months	12-24 months	2-3 years	4-5 years
 Plain drinking water	not needed	0.5-1 cups/day	1-4 cups/day	1-4 cups/day	1.5-5 cups/day
 Plain, pasteurized milk	not recommended		2-3 cups/day whole milk	≤2 cups/day skim or low-fat milk	≤2.5 cups/day skim or low-fat milk
 100% juice	not recommended		≤0.5 cups/day	≤0.5 cups/day	≤0.5-0.75 cups/day
 Plant milks/ Non-dairy beverages	not recommended		medical indication/dietary reasons only		
 Flavored milk	not recommended				
 Toddler milk	not recommended				
 Sugar-sweetened beverages (SSB)	not recommended				
 Beverages with low-calorie sweeteners	not recommended				
 Caffeinated beverages	not recommended				

AAPD Supports Healthy Eating Research Consensus Statement

- “The overconsumption of unhealthy beverages coupled with the underconsumption of healthy beverages during early childhood can lead to the development of chronic diet-related diseases including diabetes, obesity, and dental caries.”
- “Establishing healthy beverage patterns in the first five years can promote adequate intake of healthy nutrients while reducing excess consumption of sugars and saturated fats.”

Fluoridated Water Recommendations



Establish a Healthy Beverage Pattern

An important part of establishing an overall healthy dietary pattern is careful consideration of beverages. Guidance for different beverage categories is provided below.

WATER

For healthy infants with adequate intake of human milk or infant formula, supplemental water is typically not needed in the first 6 months. Small amounts (up to 4 to 8 ounces per day) of plain, fluoridated drinking water can be given to infants with the introduction of complementary foods. Plain, fluoridated drinking water intake can slowly be increased after age 1 to meet hydration and fluoride needs.

- Page 61 | Dietary Guidelines for Americans, 2020-2025 | **Chapter 2: Infants and Toddler:**

<https://www.ada.org/en/publications/ada-news/2020/november/national-childrens-dental-health-month-on-tap-in-february>
https://www.dietaryguidelines.gov/sites/default/files/202012/Dietary_Guidelines_for_Americans_2020-2025.pdf

Healthy Drinks Support Healthy Teeth

- Skip the soda and punch
- Limit 100% fruit juice to 4 oz/day with a meal
- Encourage milk, fluoridated water, and/or “Spa water”
 - Fill glass with water and ice
 - Add slice of cucumber, peach, mango, watermelon and/or strawberry



Water As the Go-to Beverage

- Drink water with meals and when dining out
- Always carry reusable water bottle
- Try fruit and herb-infused waters
- Try carbonated water
- Drink water before and after sports
- Keep water pitcher in refrigerator
- Keep pitcher of iced water on kitchen table/counter after school

Spice up your Life

- “Including herbs and spices in diet is a healthy way to help cut out sodium and flavor dishes that are unique to specific cultures” DGA
- Culinary herbs and spices used in Thai cuisine may benefit oral health
- All essential oils reduced *S. mutans* biofilm
 - In vitro study performed at Mahidol University in Thailand
 - Extracted essential oils from sweet basil, cinnamon bark, sweet fennel, kafir lime, black pepper, peppermint, spearmint
 - Results showed anti-plaque and anti-cariogenic properties


Sialogogues

- Fennel
- Cardamom
- Ginger
- Cayenne pepper

Common Foods & Flavors of the
ASIAN HERITAGE DIET

*** eat most often ** eat moderately • eat less often

Vegetables & Tubers *** bamboo shoots, bean sprouts, bitter melon, bok choy, broccoli, cabbage, carrots, daikon, eggplant, leeks, lettuce, lotus root, kale, kombu, mushrooms, mustard greens, peppers, seaweed, snow peas, spinach, sweet potatoes, taro root, turnips, water chestnuts, yams	Fruits *** apricots, bananas, cherries, coconut, dates, dragon fruit, grapes, kiwifruit, kumquat, lemons, limes, longan, lychee, mandarins, mangoes, mangosteen, melons, milk fruit, oranges, papaya, pears, pineapple, plums, pumpkin, rambutan, tangerines, yuzu	Nuts, Seeds, & Legumes *** almonds, cashews, hazelnuts, peanuts, sesame seeds, beans (adzuki, edamame, mung, soy), lentils, miso, tempeh, tofu
Grains *** barley, breads (dumplings, chapatis, mantou, naan, roti), buckwheat, millet, noodles (rice, soba, somen, udon), rice	Herbs & Spices *** amchoor, asafoetida, basil (Thai), cardamom, chiles, clove, coriander, curry leaves, fennel, fenugreek, galangal, garlic, ginger, ginseng, lemongrass, makrut lime leaves, masala, mint, parsley, pepper, scallion, star anise, turmeric, wasabi	Poultry, Eggs, & Dairy ** chicken, duck, quail, chicken eggs, duck eggs, quail eggs, ghee, paneer, yogurt (chaas, lassi), non-lactose: almond milk, rice milk, soy milk
Fish & Seafood ** abalone, bonito, clams, cockles, crab, eel, king fish, mussels, octopus, oysters, roe, salmon, scallops, sea bass, shrimp, squid, tuna, whelk, yellowtail	Meats • beef, pork	Sweets • treats made with fruits, nuts, whole grains, and minimal sugars, Chinese mooncakes, Indian rice pudding, Japanese sugared sweet potatoes, Thai mango-coconut pudding

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Key to Traditional Diets

- Nutrient-dense foods
- Healthy dietary pattern
- Healthy, balanced lifestyle
- Enjoying meals with others
- Linked to positive health outcomes and sustainability
- Promote systemic and oral health



Traditional Diets = Healthy Diets

- Evidence from epidemiological studies and clinical trials
 - Limited intake of unhealthier options are intrinsic to eating habits of regional diets
 - Positive influence on health
 - Reduces risk of common non-communicable diseases
 - Cardiovascular disease
 - Cancer
 - Oral disease
 - Greater consumption of health-promoting foods rich in antioxidants

Traditional Diets Include Foods Rich in Antioxidants

- Eat “the rainbow”
 - Low in calories
 - High in health benefits
- Prevent oxidative stress
- Prevent dysbiosis
- Promotes
 - Heart health
 - Gut health
 - Oral health
 - Energy
 - Healthy bones and skin



Mediterranean Diet

- Most studied dietary pattern
- Associated with lower rates:
 - Cardiovascular disease
 - Diabetes
 - Age-related cognitive dysfunction
 - Neurodegenerative disorders
 - Obesity
 - Hypertension
 - Metabolic syndrome
 - Dyslipidemia
 - Dementia
 - Oral disease



U.S. News and World Reports 2023 “Best Diet”

- > 30 nutritionists, physicians and epidemiologists review the evidence-based research and rank 24 diets
- Findings - 6th consecutive year: Mediterranean Diet won “Best Diet Overall”
- Prevention of all non-communicable diseases



Mediterranean Diet: Oral Health Benefits

- Laiola et al. investigated saliva samples
 - N= 49 individuals
 - Randomized into Mediterranean Diet group or control group for 8 weeks
 - Results: Reduced levels of oral pathogens in salivary microbiota of Mediterranean Diet group
- RCT by Bartha et al.
 - N = 42 individuals
 - Randomized into Mediterranean Diet group or control group for 6 weeks
 - Results: Significant reduction in gingival inflammatory parameters in Mediterranean Diet group

Mediterranean Diet ↓ Periodontal Disease

- Cross-sectional study investigated relationship b/w dietary patterns and periodontal disease prevalence
 - N= 6,209 participants of the Hamburg City Health Study
 - Periodontal cohort = 1453 participants with none/mild periodontitis and 1176 with severe periodontitis
 - Results: Mediterranean diet significantly reduced risk of periodontal disease
 - Message: Complex biological mechanisms include-carbs can alter microbial diversity and directly affect periodontal ligament cells; saturated fatty acids increase oxidative stress and promote periodontal damage

Fruit and Vegetable Intake in America

- Recommendation: 2C/day fruits and 2.5C/day vegetables
 - 80% not meeting fruit recommendation
 - 90% not meeting vegetable recommendation
- Low in calories
- Packed with health benefits



Whole Grains: Backbone of Traditional Diets

- Types of whole grains eaten in different regions vary from place to place
 - Dependent upon climate and species native to locality
- Mediterranean
 - Barley, rye, emmer, farro, spelt
- Latin America
 - Corn, amaranth, quinoa, rice
- African Heritage
 - Sorghum, millet, teff
- Asian
 - Millet, soba (buckwheat noodles), barley porridge, brown rice, black rice, red rice

Traditional Diets Include Whole Grains

- Nutrient-dense
- Contain fiber, vitamins, polyphenols, minerals, antioxidants, positively affect gut and oral microbiota
- Whole grains are associated with reduced risk for caries and periodontal disease
- Shift to whole grains

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WHOLE
GRAINS
COUNCIL

WHOLE GRAINS 101

Whole grains are healthier, with more fiber, more protein, and higher levels of many essential nutrients. Most of the grain kernel's nutrients—and flavor—are in the bran and germ, which are routinely stripped out to make white flour.

Grain Anatomy

Nutrient	Whole Wheat	Refined Wheat Flour	Enriched Wheat Flour
Vitamin E	100%	0%	0%
Vitamin B6	11%	0%	0%
Magnesium	16%	0%	0%
Thiamin (B1)	24%	0%	156%
Riboflavin (B2)	24%	0%	279%
Niacin (B3)	25%	0%	119%
Fiber	25%	0%	0%
Potassium	29%	0%	0%
Iron	33%	0%	129%
Folate	59%	0%	645%
Protein	76%	0%	0%

EXAMPLES OF WHOLE GRAINS. TRY A NEW ONE EVERYDAY!

AMARANTH

BARLEY

BUCKWHEAT

BULGUR

CORN

FARRO

FONIO

FREEKEH

MILLET

OATS

QUINOA

RICE

RYE

SORGHUM

TEFF

TRITICALE

WHEAT

WILD RICE

HOW TO FIND WHOLE GRAINS

THE 100% STAMP	THE 50% STAMP	THE BASIC STAMP
Products where ALL of the grain is whole grain.	Products where at least 50% of the grain is whole grain.	Products that contain a significant amount of whole grain, but which contain primarily refined grain.
Minimum requirement: 16 grams whole grain per serving.	Minimum requirement: 8 grams whole grain per serving.	Minimum requirement: 8 grams whole grain per serving.

The different gram amount on each Stamp tells you how many grams of whole grain are in ONE serving of the product.

100% WHOLE GRAIN
16g or more per serving

LOOK FOR THESE WORDS IN THE INGREDIENTS:

- Whole Grain: whole [grain], whole [grain] flour, wheat berries, stoneground whole [grain], oats, oatmeal, brown or wild rice, millet, quinoa, amaranth, hulled or hull-less barley
- May or May Not Be Whole Grain: flour, wheat, wheat flour, organic unbleached, semolina, multigrain, stoneground [grain]
- Not Whole Grain: enriched flour, bran, germ, wheat germ, degerminated, pearled barley, degerminated corn, white rice

[OLDWAYSPT.ORG](http://oldwayspt.org) • [WHOLEGRAINSCOUNCIL.ORG](http://wholegrainscouncil.org)

“Swap” in More Whole Grains

Swap out	Swap in
White bread White-flour tortillas Processed breakfast cereal	Whole grain bread Whole wheat tortillas, pita Oatmeal
White rice Pasta	Brown rice, quinoa Buckwheat, bulgur, millet as a side dish
Chips Pretzels	Popcorn Whole grain crackers

Healthy Lifestyle Supports Strong Teeth

- Traditional diet
- Oral hygiene
- Mindfulness
- Sense of humor
- Sleep
- Reduce stress
- Relax
- Exercise
- Hydration
- Living environment



Call to Action – Role of Oral Healthcare Professionals

- Encourage a whole-food, nutrient-dense dietary pattern
- Integrate nutrition education into all oral healthcare messages
- Provide support and recommend patient-friendly sources of information
 - <https://www.mouthhealthy.org/en/nutrition/>
 - <https://www.myplate.gov>
 - <https://www.eatright.org/health/wellness/your-overall-health/>
 - <https://www.aapd.org/resources/parent/>
 - <https://www.cdc.gov/>

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