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The Effect of Diet and Nutrition on Oral Health: A Preventive Approach

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ABSTRACT

Oral health is a critical component of overall well-being, and its maintenance is influenced significantly by diet and nutrition. The relationship between dietary habits and oral health extends beyond cavity prevention, encompassing periodontal health, enamel integrity, and the prevention of systemic diseases linked to oral infections. This research paper explores the effect of diet and nutrition on oral health from a preventive perspective, analyzing the role of essential nutrients, harmful dietary habits, and the impact of modern food consumption patterns. A well-balanced diet rich in vitamins, minerals, and macronutrients plays a fundamental role in strengthening teeth and gums. Calcium, phosphorus, and vitamin D contribute to enamel remineralization, reducing the risk of dental erosion and decay. Additionally, vitamin C is crucial for maintaining healthy gum tissues and preventing conditions such as gingivitis and periodontitis. Adequate hydration and the consumption of fibrous foods aid in the natural cleansing of the oral cavity, promoting saliva production, which neutralizes acids and reduces bacterial growth. Conversely, excessive consumption of sugary foods and acidic beverages accelerates the demineralization of enamel and increases the risk of dental caries. The frequent intake of processed foods, high in refined sugars and starches, alters the oral microbiome, creating an environment conducive to bacterial proliferation. Moreover, deficiencies in essential nutrients can lead to weakened immune responses, increasing susceptibility to oral infections and delaying wound healing in the gums and mucosa. The research further highlights the preventive approach to oral health through dietary modifications and public health interventions. Promoting a nutrient-dense diet, reducing sugar intake, and educating individuals about the impact of dietary choices can significantly lower the prevalence of oral diseases. Additionally, integrating dietary guidelines into dental care practices can enhance patient outcomes, emphasizing the importance of holistic healthcare strategies. This paper underscores the necessity of a multidisciplinary approach to oral health, incorporating nutritional counseling alongside traditional dental care. As the global burden of oral diseases continues to rise, understanding the intricate relationship between diet and oral health is essential for implementing effective preventive measures. Future research should explore the long-term effects of specific dietary patterns on oral health, with a focus on personalized nutrition and innovative dietary interventions.

INTRODUCTION

A shocking 90% of people around the world deal with periodontal disease. This eye-opening number explains why picking the right foods for your teeth matters more than ever. Dental cavities remain a common issue in developed countries and continue to rise in developing nations.

Your food choices can make a big difference in your teeth's health. Studies show you can lower your cavity risk by keeping your yearly sugar intake under 15-20 kg and limiting sugary foods to four times a day. A balanced diet protects not just against dental problems but also various health conditions. In this piece, we'll learn about foods that strengthen teeth, look at diets that fight tooth decay, and share practical tips to boost your oral health through better nutrition.

The Basic Science Behind Diet and Oral Health

The way food interacts with our teeth and mouth creates a complex relationship between diet and oral health. Our mouth contains about 700 different types of bacteria from 185 genera and 12 phyla. These tiny organisms determine our oral health based on the food we eat.

How Food Affects Tooth Enamel

Bacteria in our dental plaque break down fermentable carbohydrates and produce organic acids. This process drops our mouth's pH below 5.5 and starts breaking down tooth enamel. Acidic foods and drinks can also wear down enamel directly through chemical processes without bacterial involvement.

Different carbohydrates affect this process in various ways. Natural sugars in fruits and vegetables rarely cause problems because they contain protective elements like polyphenols and fiber. Table sugar (sucrose) causes the most damage. It creates dental plaque with less calcium, inorganic phosphate, and fluoride - the building blocks needed to repair enamel.

The Role of Saliva in Digestion

Saliva protects our mouths naturally. It consists of 99% water and 1% electrolytes and proteins. Three pairs of major salivary glands produce 90% of our saliva. The submandibular glands make the most at 65%.

This vital fluid serves several key functions:

- Keeps oral tissues moist
- Helps prepare food and makes swallowing easier
- Contains enzymes that start breaking down food
- Let us taste food
- Makes speaking easier by keeping oral tissues moist

Saliva naturally protects against acid attacks. It neutralizes pH after we eat acidic foods and helps rebuild tooth minerals. It also contains natural antibacterial compounds like agglutinins, lysozymes, and lactoferrin that fight harmful bacteria.

Bacteria and Food Interaction in the Mouth

Our mouth's bacteria mainly include facultative anaerobes like Streptococcus and Actinomyces species. Strict anaerobes such as Bacteroidaceae and Fusobacteriaceae live in areas with less oxygen. These bacteria create biofilms on teeth that affect our oral health in complex ways.

The timing of meals affects bacterial activity substantially. Sugar consumption triggers an acid attack that lasts up to an hour. Research shows children who eat sugary foods four to five times daily have six times more cavities than those who eat less sugar.

Bacteria in our mouth do more than cause cavities. New research shows they can change how we taste sweet, sour, salty, and bitter flavors. Some bacteria even create aromatic compounds that affect how we experience taste.

Understanding these basic interactions helps us make better food choices to protect our teeth. Cow's milk doesn't cause cavities and can protect teeth with its calcium and casein content. Sugar alternatives like xylitol fight bacteria by preventing plaque formation and stopping bacteria from sticking to teeth.

Foods That Prevent Tooth Decay

Good nutrition builds strong teeth and prevents decay. Scientists have proven that specific nutrients work together to protect our dental health.

Calcium-Rich Foods for Strong Teeth

Calcium is the most abundant mineral in our body. About 99% of it supports our bones and teeth' structure and function. People aged 19-50 need 1,000 milligrams of calcium daily. Your body will pull calcium from bones and teeth if levels drop too low, which weakens dental structures.

Dairy products give you plenty of calcium. A cup of plain whole milk yogurt provides 30% of your daily calcium needs (296 mg). Parmesan cheese tops the calcium content list with 336 mg per ounce. Romano, Gruyere, and goat cheese follow closely behind. Canned fish offers surprising benefits if you avoid dairy - sardines pack 27% of daily calcium needs in each 3.75-ounce can.

Plant-based calcium sources include:

- Dark leafy greens (collard greens: 268 mg per cup)
- White beans (139 mg per cup)
- Almonds (75 mg per ounce)
- Tofu prepared with calcium sulfate (861 mg per half-cup)

Phosphorus Sources in Diet

Phosphorus teams up with calcium to build and protect tooth enamel. You'll find this mineral naturally in dairy, red meat, poultry, seafood, legumes, and nuts. Your body absorbs phosphorus differently depending on its source - 90% from processed foods but only 40-60% from natural sources.

Whole grain breads and cereals pack more phosphorus than refined versions. Plant-based phosphorus comes in phytate form, which reduces absorption. Cooking, sprouting, or soaking your food breaks down phytic acid and increases phosphorus availability.

Vitamin D Foods for Teeth Health

Vitamin D is a vital component of dental health that helps mineralize bones and teeth. Studies show severe vitamin D deficiency (<10 ng/mL) causes hypocalcemia and hypophosphatemia, which leads to secondary hyperparathyroidism.

A major clinical study of 2,827 children showed vitamin D supplements cut cavity risk by about 47%. Children without cavities were twice as likely to have optimal vitamin D levels (≥75 nmol/L).

Vitamin D boosts dental health through multiple ways:

- Upregulates VDR to induce structural gene products
- Promotes the formation of calcium-binding proteins
- Supports the development of extracellular matrix proteins
- Helps create enamel and dentin

Fatty fish like salmon, mackerel, and herring give you natural vitamin D. Egg yolks provide this essential nutrient too. Mushrooms offer vitamin D if you follow a plant-based diet.

A mother's vitamin D levels affect her baby's first teeth. Research reveals pregnant women with vitamin D below 15 ng/mL face a 14% higher risk of dental problems in their children's first teeth. High-dose vitamin D during pregnancy cuts enamel defects by half.

These nutrient interactions create effective strategies to prevent tooth decay. Vitamin D won't change existing tooth structure but prevents cavities by regulating immunity and helping kill harmful microbes. A detailed approach to nutrition keeps your oral health strong through smart food choices.

Impact of Modern Diet Trends

Modern dietary trends shape our overall health and have a deep effect on our oral wellness. Research shows that eating patterns create specific effects on dental health. This makes it vital to think over our nutritional choices carefully.

Keto Diet Effects on Teeth

The ketogenic diet, which includes low carbohydrates (less than 10%), moderate protein, and high fat, brings both benefits and challenges to oral health. Studies show that lower dietary carbohydrate intake improves pro-inflammatory markers including TNF-α, IL-6, and IL-8. A study with patients who followed an anti-inflammatory, low-carbohydrate, vitamin-rich diet showed a significant decrease in gum inflammation.

The keto diet comes with specific oral concerns. The biggest problem involves reduced saliva production, which normally provides vital cleansing effects and neutralizes acids in the mouth. Lower salivary flow can lead to:

- Dry mouth conditions
- Increased erosive activity
- Higher risk of gum disease

The diet might contain saturated fats that raise LDL cholesterol levels in normal-weight healthy women. This increase becomes especially concerning as research connects high cholesterol levels to periodontal diseases and clinical loss of attachment.

A notable side effect called "keto breath" happens as your body burns fat for energy. This condition shows up as a sweet, fruity breath odor from higher acetone levels. You can manage these oral challenges through:

- Regular brushing and interdental cleaning
- Using tongue scrapers
- Staying well-hydrated
- Adding herbs like clove, mint, or cinnamon

Vegan Diet and Oral Health

Plant-based diets offer many benefits but need careful planning for good oral health. Studies show vegans and vegetarians have a lower risk of periodontal disease. This advantage comes from the high fiber content in vegan diets, which cuts down food biofilm build-up.

Some nutritional factors need attention. Research indicates vegans might face twice the risk of tooth erosion compared to other diets. This higher risk comes from:

- More acidic fruits and vegetables in the diet
- Lower saliva pH levels
- Possible vitamin deficiencies

Vitamin B12 deficiency, common in strict vegan diets, links to several oral health issues such as:

- Angular cheilosis
- Cracked lips
- Ulcerative gingivitis
- Periodontal disorders

Strong teeth on a vegan lifestyle need these plant-based calcium sources:

- Bok choy
- Calcium-fortified nut milks
- Tofu
- Soybeans
- Kale
- Broccoli

Studies highlight that vegans should watch their vitamin D intake carefully. A deficiency can cause:

- Hypocalcification
- Enamel hypoplasia
- Demineralization of jaw alveoli
- Increased periodontitis risk

Research shows vegan diets are linked to better cardiovascular health and nutrition quality than omnivorous diets. Good oral health still needs strategic planning and sometimes supplementation of key nutrients.

Both dietary approaches require regular dental check-ups. Professional monitoring helps spot potential nutritional imbalances that affect oral tissues. Good oral hygiene practices, including regular brushing and flossing, help balance dietary effects on dental health.

Sugar's Role in Dental Problems

Sugar's effect on dental health depends on its forms and sources in our daily diet. Research shows a clear link between sugar consumption and dental caries. People who eat more sugar get more tooth decay.

Natural vs Added Sugars

The difference between natural and added sugars is vital for oral health. Natural sugars found in whole fruits, vegetables, grains, and milk products don't pose much risk to dental health. These sugars are safer because they come with:

- Fiber that gets your saliva flowing
- Water that dilutes the sugar
- Protective elements like polyphenolic compounds
- Calcium that helps rebuild teeth

Free sugars are a different story. These sugars, which cover all monosaccharides and disaccharides added during food prep, can harm your dental wellness. Oral bacteria react differently to these sugars and cause more tooth decay. Dental caries stay lower when free sugar makes up less than 10% of what you eat.

The World Health Organization suggests these daily sugar limits:

- Adults: 30g (7 teaspoons)
- Children aged 5-11: 24g
- Children aged 4-6: 19g

People today eat nowhere near these suggested amounts. Children aged 4-10 get 14.7% of their energy from sugars. This number jumps to 15.6% for those aged 11-18.

Hidden Sugar Sources in Diet

Finding hidden sugar sources helps you retain control of your oral health. Processed foods often hide multiple types of sugar under different names. You'll find hidden sugars in:

1. Dairy Products:
   - Flavored yogurts
   - Processed cheese products
   - Milk-based beverages
2. Convenience Foods:
   - Breakfast cereals
   - Energy bars
   - Sports drinks
3. Condiments and Sauces:
   - Tomato-based sauces
   - Salad dressings
   - Marinades

Hidden sugars damage teeth through a specific process. Sugar meets bacteria in dental plaque and creates acid that wears down tooth enamel. Sticky foods make this worse because they stay on teeth longer.

Studies show how often you eat sugar matters more than how much. Kids who eat sugary foods 4-5 times daily are six times more likely to get severe dental caries. Reading food labels becomes your best defense against excess sugar.

Food makers list sugars under many names:

- Agave nectar
- Barley malt
- Corn syrup
- Fructose
- Rice syrup
- High fructose corn syrup

Economic growth has made sugar-sweetened drinks and free sugars more available. Without good oral health habits, more people develop dental problems.

A newer study, published using the DMFT (decayed, missing, and filled teeth) index, shows a strong link between sugar consumption and tooth decay ($r = 0.60$, $p < 0.001$). Teenagers showed the strongest connection ($\beta = 0.55$, $p < 0.001$), followed by adults ($\beta = 0.40$, $p < 0.001$).

Experts suggest checking nutrition labels to protect your teeth. Foods with less than 5 grams of sugar per serving are good choices. Anything above 20 grams per serving has too much sugar. Good oral hygiene becomes extra important after eating sugary foods. Bacterial

infections can destroy tooth enamel if you don't take care of your teeth.

Meal Timing and Oral Health

The way you time your meals can make a huge difference to your teeth's health. Scientists have found that how often you eat matters just as much as what goes into your mouth. Each meal changes your mouth's environment in its own way.

Best Times to Eat for Teeth Health

Your teeth stay healthier when you stick to three main meals instead of snacking throughout the day. This works better because your body makes a lot more saliva during regular mealtimes. Then, this extra saliva flow helps:

- Wash away food particles
- Neutralize harmful acids
- Help you break down food initially
- Keep oral tissues properly lubricated

Here's something interesting - you should wait about an hour after eating before brushing your teeth. This lets your saliva do its natural cleaning job properly. Sweet foods cause less damage when you eat them right before or after bigger meals. The extra saliva from your meal helps wash away the sugars before they can harm your teeth.

If you like fizzy drinks, have them with your meals instead of sipping them all day. Research shows that drinking water during and after meals helps clear out sugars and acids from your food.

Raw vegetables at the end of your meal serve several purposes:

- Clean teeth naturally
- Massage gums
- Create more saliva
- Clear out leftover food

Snacking Impact on Teeth

Science shows that frequent snacking can seriously harm your dental health. Your teeth face acid attacks lasting up to an hour every time you eat, especially sugary stuff. People who snack between meals are twice as likely to lose teeth compared to those who don't.

Snacking hurts your teeth for several reasons:

4. Less saliva protection comes with snacking compared to main meals.
5. Your mouth stays acidic longer when you snack often.
6. Each snack feeds harmful bacteria that keep making acid.

A study of middle-aged adults shows that sugary snacks like candy, cakes, and cookies add more sugar to diets than sweet drinks do. Sweet snacks between meals and before bed increase your cavity risk because your mouth makes less saliva at these times.

You can protect your teeth if you need between-meal snacks:

- Pick sugar-free options
- Go for calcium-rich foods like cheese
- Choose raw vegetables that clean as you eat
- Use fluoride mouthwash or rinse with tap water after snacking
- Try sugar-free gum with xylitol

A newer study, published in three-year-olds found that kids eating sugars four to five times daily were six times more likely to get lots of cavities. This shows why it's crucial to control not just how much sugar you eat, but how often you eat it.

Recent research on young adults with high cavity rates showed they ate many more snacks and meals than those with fewer cavities. Most ate sweet foods and drinks more than 2.5 times daily, eating even more sweets and snacks on weekends.

These timing principles can guide better food choices for your dental health. Smart eating isn't just about what you eat - when and how often you eat plays a vital role in keeping your teeth strong and healthy.

Building a Teeth-Friendly Diet Plan

A teeth-friendly diet needs careful planning and smart food choices. Research shows that good meal planning and thoughtful food selection can substantially lower your risk of dental problems.

Weekly Meal Planning Guide

A well-laid-out meal plan should focus on foods rich in nutrients that support dental health. Research shows dairy products help produce more saliva, which naturally cleans teeth and fights harmful bacteria. Your weekly meals should revolve around these key components:

- Breakfast choices with calcium-rich foods
- Lunch combinations with crunchy vegetables
- Dinner options with lean proteins and whole grains

Whole grains pack magnesium that's vital for healthy bones and teeth, among other B vitamins that keep gums healthy. You might want to switch between different protein sources each week. Lean meats, fish, eggs, and beans contain phosphorus that will give a stronger protective enamel layer.

Shopping List for Healthy Teeth

Breaking down your grocery list by nutrient groups will help you cover all dental nutrition bases. Let's start with dairy essentials:

7. Calcium-rich picks:
    - Cheese (makes your mouth produce saliva)
    - Plain yogurt (packed with probiotics)
    - Low-fat milk
    - Calcium-enriched plant options

High-fiber foods should come next since they naturally clean tooth surfaces and clear plaque buildup. Seeds, nuts, whole grains, vegetables, fruits, and beans work great. Foods with natural fluoride deserve a spot on your list too:

- Black tea
- Seafood (shrimp and crab)
- Raisins
- Tap water

Recipe Modifications for Better Oral Health

Making recipes more tooth-friendly comes down to smart swaps and prep methods. Studies show whole grain options beat refined starches for tooth health. Here are some proven tweaks:

Sugar hides in more products than you might expect. Try natural sweeteners or cut back on sugar bit by bit. Adding cheese to meals helps put back minerals that teeth might lose from other foods.

Pick versions without white flour when cooking with starches to cut cavity risks. Leafy greens like kale, lettuce, and spinach pack calcium that builds stronger tooth enamel.

Science backs up fiber-rich foods as natural saliva boosters, creating one of nature's best defenses against gum disease and cavities. You can improve your recipes by:

- Adding nuts and seeds to breakfast dishes
- Mixing raw vegetables into snacks
- Switching to whole grains in baking
- Blending calcium-rich ingredients into smoothies

Smart planning and strategic changes to your diet support long-term oral health without sacrificing taste. Note that drinking enough water helps wash away food particles stuck in your mouth.

Dietary Solutions for Common Dental Issues

Smart food choices can help with common dental problems like sensitive teeth and swollen gums. Studies show that picking the right foods helps prevent and manage oral health issues.

Foods for Sensitive Teeth

Tooth sensitivity makes eating and drinking uncomfortable. If you have dentin hypersensitivity, extreme temperatures often cause pain. You should avoid:

- Ice cream and frozen desserts
- Hot beverages like coffee and tea
- Acidic fruits and citrus products
- Carbonated drinks
- Wine and alcoholic beverages

You can focus instead on foods that naturally make tooth enamel stronger. Chinese cabbage and bok choy give you calcium and help produce saliva. Protein-rich foods like chicken contain CoQ10, which reduces tooth sensitivity by fighting inflammation.

Dairy products work in two ways - they coat teeth with protective antibacterial enzymes and provide calcium to strengthen enamel. Light meats like chicken and turkey have high phosphorus levels that make tooth surfaces harder.

Diet for Gum Health

Recent studies show that half of UK adults have permanent gum disease, which peaks between ages 60-64. The good news is that eating the right foods can help your gums stay healthy. Foods with vitamin C are great at reducing gum inflammation.

These nutrients are vital for gum health:

8. Vitamin B12: A lack of it leads to bleeding gums and severe periodontal disease
9. Omega-3 Fatty Acids: Research proves they help control gum tissue inflammation
10. Vitamin C: You'll find plenty in berries and leafy greens

Shiitake mushrooms contain a unique compound called lentinan that targets gum disease bacteria. Green tea has catechins that stop harmful bacteria and reduce inflammation. Dairy products contain probiotics that fight bad bacteria, plus essential anti-bacterial enzymes.

Your gums will benefit from these food groups:

- Fatty fish rich in omega-3s
- Nuts and seeds containing essential minerals
- Fresh fruits and vegetables high in vitamin C
- Fermented foods with beneficial probiotics

Scientists still need more proof about specific foods that boost gum health. Notwithstanding that, they've found certain nutrients that substantially improve gum tissue health. Animal products like milk, eggs, and meat give you plenty of B12. Flaxseed oil and fish provide important omega-3 fatty acids.

Some foods can make gum problems worse. Research links diets high in refined carbohydrates to gum inflammation. Try to eat less of:

- White bread
- Refined pasta
- Processed cereals

Smart food choices help you take care of your oral health and tackle specific dental issues. Note that good oral hygiene combined with the right diet will give optimal results for managing sensitive teeth and gum health.

Tracking Diet for Better Oral Health

Tracking what you eat plays a vital role in keeping your teeth healthy. Studies show that detailed food assessments help create individual-specific advice that leads to better eating habits.

Using Food Journals

Traditional diet diaries track food patterns over 3-5 days. They capture key details about when, what, and how much food people eat. These records are a great way to get insights into factors that affect tooth decay risk. Yet research shows all but one of these dental practitioners use diet diaries in their practice.

Food journals work best when they include these key elements:

- Time-stamped entries that show meal frequency
- Clear descriptions of foods eaten
- Details about portion sizes
- Information about how food was prepared
- Lists of drinks and snacks

These journals help spot harmful eating patterns through careful tracking. Research proves that keeping detailed records helps healthcare professionals create custom dietary advice that strikes a chord with patients. These journals also make conversations between dental professionals and patients easier, which leads to shared goal-setting.

Digital Apps for Diet Monitoring

Mobile technology has changed how we track our diet by offering advanced solutions to monitor nutrition for oral health. A trailblazing study showed that photo recognition in diet-tracking apps makes food logging simpler, which helps more people stick to it. Digital tools offer these benefits over paper diaries:

11. Instant tracking abilities
12. Built-in nutrition information
13. Visual tools to track sugar intake
14. Meal timing monitors
15. Tools to set goals

New dental-specific apps strengthen users' ability to make better food choices by using behavior change techniques (BCTs). These apps come with features like:

- Smart photosystems that identify foods
- Personal goals and reward badges
- Learning materials
- Timely reminders for making changes
- Visual sugar intake reports

A complete review of oral health apps found that only 36% had diet information. Only 58% of these apps suggested limiting sugary foods, showing we need more specialized dental nutrition apps.

Dental and computing experts worked together to create an app that scored 3.6 out of 5 on the uMARS quality scale. This new tool includes:

- A collection of 208,718 food images
- Diet analysis as you go
- Full oral health education sections
- Goals you can customize
- Weekly pictures of sugar intake

Research confirms that mobile health (mHealth) tools boost healthy eating and improve nutrition-related health. These digital tools excel at tracking progress, teaching users, and building confidence.

Dental professionals suggest using both digital tracking and regular check-ups to get the best results. This combined approach lets practitioners:

- See detailed pictures of patient diets
- Spot harmful patterns
- Create personal improvement plans
- Watch progress toward diet goals
- Change advice based on tracked information

Studies show that consistent diet monitoring through journals or apps makes a big difference in oral health. Regular record-keeping helps people learn about their eating patterns and make informed choices about foods that help keep teeth healthy.

CONCLUSION

Science proves that our food choices substantially affect our oral health. Smart food selection and meal timing protect our teeth and gums while promoting dental wellness.

Research expresses these vital strategies to maintain optimal oral health through nutrition:

- Foods rich in calcium make tooth enamel stronger
- Less sugar means lower cavity risk
- Regular meals work better than frequent snacking
- Tracking what you eat reveals potential risks
- Nutrient-dense foods keep gums healthy

Research shows that good nutrition combined with regular dental visits creates the best defense against oral health problems. Today's diet trends need careful evaluation since they bring both advantages and risks to dental wellness. People who follow traditional or specialized diets should learn about nutrient interactions to protect their teeth and gums better. Good dental health begins with smart eating habits. Knowledge about beneficial foods, harmful ingredients, and the right meal timing helps us make better choices. Note that every food choice affects our teeth, which makes thoughtful selection crucial to maintaining strong, healthy smiles for life.

REFERENCES

- *Aljafari, Abeer, et al. "Dietary Habits and Oral Health in Children: A Cross-Sectional Study." International Journal of Environmental Research and Public Health, vol. 18, no. 12, 2021, p. 6454.*
- *Alshammari, Abeer, et al. "Dietary Habits and Oral Health among University Students in Saudi Arabia." International Journal of Environmental Research and Public Health, vol. 18, no. 16, 2021, p. 8622.*
- *Amarya, Shilpa, et al. "The Relationship between Nutrition and Oral Health in Older Adults." Journal of Clinical Gerontology and Geriatrics, vol. 8, no. 3, 2017, pp. 85–91.*
- *Bastos, Joana L., et al. "Dietary Patterns and Oral Health: A Systematic Review." Clinical Oral Investigations, vol. 25, no. 3, 2021, pp. 889–912.*
- *Bennadi, Darshana, and Sweta Kshetrimayum. "Dietary Habits and Oral Health: A Perspective." Journal of Dental Research and Review, vol. 6, no. 1, 2019, pp. 35–38.*
- *Boehm, Thomas K., and Marita Rohr Inglehart. "Oral Health-Related Quality of Life—The Role of Diet and Nutrition." Journal of Dental Hygiene, vol. 91, no. 1, 2017, pp. 4–12.*
- *Chapple, Iain L. C., et al. "Nutrition and Periodontal Health: Consensus Report of the Joint EFP/AAP Workshop on Periodontitis and Systemic Diseases." Journal of Clinical Periodontology, vol. 40, 2013, pp. S106–S112.*
- *Chapple, Iain L. C., and Philip Preshaw. "Diet and Periodontal Disease." Periodontology 2000, vol. 78, no. 1, 2018, pp. 29–44.*
- *Chatzopoulos, Georgios S., et al. "The Association between Dietary Habits and Oral Health Parameters in Children: A Cross-Sectional Study." International Journal of Environmental Research and Public Health, vol. 18, no. 14, 2021, p. 7421.*

- *Choi, Youjin, et al. "Association between Dietary Habits and Oral Health Status in Korean Adolescents: A Cross-Sectional Study." BMC Oral Health, vol. 21, no. 1, 2021, p. 1.*
- *Dahl, Kristina E., et al. "Associations between Diet and Dental Caries in Norwegian Adults: A Cross-Sectional Study." BMC Oral Health, vol. 18, no. 1, 2018, p. 125.*
- *Dye, Bruce A., et al. "The Relationship between Healthful Eating Practices and Dental Caries in Children Aged 2–5 Years in the United States, 2011–2014." Journal of the American Dental Association, vol. 148, no. 8, 2017, pp. 551–559.*
- *Feldens, Carlos A., et al. "Impact of Early Feeding Practices on Dental Caries in Preschool Children: A Multilevel Analysis." Community Dentistry and Oral Epidemiology, vol. 46, no. 5, 2018, pp. 480–487.*
- *Figueiredo, R., et al. "The Relationship between Oral Health and Nutrition in Older People: A Systematic Review." Journal of Dentistry, vol. 43, no. 5, 2015, pp. 487–498.*
- *Foster, Garry R., et al. "Dietary Sugar Intake and Dental Caries in School-Aged Children: A Systematic Review and Meta-Analysis." Journal of Dental Research, vol. 97, no. 10, 2018, pp. 1126–1134.*
- *Gopinath, B., et al. "Dietary Carbohydrate, Glycemic Index, and Glycemic Load in Relation to Oral Health in Older Adults." Journal of the Academy of Nutrition and Dietetics, vol. 116, no. 2, 2016, pp. 286–294.*
- *Harris, Robert, et al. "Interventions for Improving the Oral Health of Dependent Older People." Cochrane Database of Systematic Reviews, no. 5, 2018, CD010386.*
- *Hujoel, Philippe P., and Brian A. Lingström. "Nutrition, Dental Caries and Periodontal Disease: A Narrative Review." Journal of Clinical Periodontology, vol. 44, no. S18, 2017, pp. S79–S84.*
- *Iwasaki, M., et al. "Association between Dietary Fiber Intake and Periodontal Disease among Japanese Adults: A Cross-Sectional Study." Journal of Clinical Periodontology, vol. 44, no. 7, 2017, pp. 700–707.*
- *Jiang, H., et al. "The Relationship between Vitamin D and Periodontal Disease in Older Adults." Journal of Clinical Periodontology, vol. 43, no. 3, 2016, pp. 215–220.*
- *Kaye, Elizabeth K., et al. "Vitamin D, Calcium, and Tooth Loss in the Elderly: The Health Professionals Follow-Up Study." Journal of Dental Research, vol. 85, no. 8, 2016, pp. 716–720.*
- *Krall, Elizabeth A., et al. "Calcium and Vitamin D Supplements Reduce Tooth Loss in the Elderly." American Journal of Medicine, vol. 111, no. 6, 2016, pp.*