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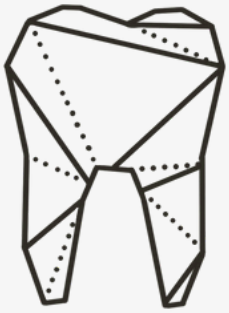

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STORIES IN THIS ISSUE

Purpose of Fluoride-Free Toothpaste

By Evelyn Vu

Fluoride. Most children are taught early on to associate this element with dental hygiene and health. The primary benefit of fluoride is that it strengthens our enamel, a hard substance that covers teeth, preventing cavities and overall oral health deterioration (Cleveland Clinic). For this reason, fluoride is found in most dental hygiene products and even in our drinking water, due to the fluoridation of public water beginning in the 1940s (The Fluoride Debate: The Pros and Cons of Fluoridation).

Despite these established benefits of fluoride, various research studies have led to concerns over fluoride's safety, specifically for younger consumers. Children under six years old make up 80%, a vast majority, of fluoride toxicity cases, which occur when fluoride-containing products are ingested (The Fluoride Debate: The Pros and Cons of Fluoridation). Fluoride toxicity can result in "pain, nausea, vomiting," and in extreme cases, "coma, and ultimately death" (The Fluoride Debate: The Pros and Cons of Fluoridation). Furthermore, fluoride overuse can cause a specific case of fluoride toxicity called fluorosis. Fluorosis causes damage and discoloration of teeth that can occur when the enamel is still developing in children (What to Know About Fluoride's Impact on Health). While an undeniable risk, fluorosis only occurs at a specific dosage and only for young children, so the severity of this threat is controversial.

Another concern of fluoride is its potential role in causing certain bone-related cancers; however, this speculation has been disproved. Still, new studies propose that fluoride is related to worse neurocognitive development (Why Fluoride Is Necessary for Public Health). According to Bloomberg's School of Public Health, no research has consistently proven this connection yet. Fluoride dosage is highly dependent on each individual, especially because fluoride can be present in the water supply. Despite the lack of evidence, fear of fluoride overconsumption has led to the development of a new option: fluoride-free toothpaste.

While periodontist and professor Dr. David Okano specifies that the action of brushing is more important for removing plaque than the toothpaste itself, he also emphasizes that fluoride is needed for remineralization (Are There Benefits to Using Fluoride-Free Toothpaste?). Enamel doesn't grow back, so it's important to maintain the strength of this protective layer on our teeth. Currently, researchers are exploring and testing for fluoride replacements, with "calcium-phosphate-based molecules" being the strongest candidate to effectively match the mineralizing ability of fluoride (Improving Oral Health with Fluoride-Free Calcium-Phosphate-Based Biomimetic Toothpastes: An Update of the Clinical Evidence).

Whether or not overconsumption of fluoride is a problem that necessitates the use of fluoride-free toothpaste is still up for debate. The increased marketing of fluoride-free toothpaste is arguably a product of societal beliefs rather than firm scientific evidence. Research has neither proven these new speculations regarding fluoride risks nor found an effective replacement for the countless dental hygiene products that do contain fluoride. Until a clear conclusion can be made, though, fluoride-free toothpaste is an alternative that is now widely available.

Odontophobia: A look into the fear of dentists

By Armaan Kang

What comes to mind when you think of the dentist? To some, the dentist is an essential component of their health and well-being. To others, the dentist is a good reason to take the evening off from work. Yet for many, a trip to the dentist can be a source of distress and suffering. The fear of dentists is a widespread phobia that must be considered when providing dental services. This condition goes by many names, including odontophobia, dentophobia, and dental anxiety. Though dental anxiety and odontophobia are terms that are often used interchangeably in psychological and dental research, odontophobia may be distinguished as a more extreme version of dental anxiety, depending on the author.

An important consideration when looking at odontophobia is how widespread it is in Western society. A 2013 survey published in the *British Dental Journal* found that 48% of the population in the United Kingdom suffered from some degree of dental anxiety, and of that 48%, a quarter of those people demonstrated high levels of anxiety indicative of odontophobia.

The fear of the dentist not only inflicts emotional distress upon a person but can also lead to negative impacts on one's physical health. In a 2023 study published by the Journal of Clinical Medicine, psychology professor Dr. Katja Petrowski at the Johannes Gutenberg University of Mainz found a link between dental anxiety and poor oral hygiene, showing that people with dental anxiety tend to brush and visit the dentist less. This makes sense, as someone who is scared of the dentist is not as likely to pay them a visit.

The significance of odontophobia is in how common of a condition it is, as well as in its impacts on people's health and wellbeing. Through research into the subject, a better understanding of the causes of odontophobia was found, and through this understanding of causes, better treatments for odontophobia were developed.

The term odontophobia was first created in the 1940s, with one of the first papers on the subject written in 1946 by psychiatrist Dr. Isador Coriat. In his article "Dental Anxiety: Fear of Going to the Dentist" for the Psychoanalytic Review, he discussed how odontophobia originates from the helpless feeling one has when visiting the dentist. He used the sense of worry of oncoming danger to describe dental anxiety. After this initial naming of dental anxiety, there was a lot of research done and many papers written trying to find both the sources of odontophobia and their treatments.

Former president of the Italian Association of Dental Anaesthesia and psychology professor, Dr. Enrico Facco, researched the history of the phobia's research for the peer-reviewed journal Frontiers in Psychology. Notable milestones highlighted in his research include the connection between dental anxiety and negative experiences with dentists established in 1954, as well as the creation of the dental anxiety scale in 1969. Different treatments were explored, from the use of sedatives to the hypnosis of patients. Notable research was done by psychologist Edward Shoben in 1954, in which he found that negative family histories with dentists were the main cause of odontophobia.

Stained and Protected: The Coffee Conundrum

By Uran Seo

Coffee, a daily ritual for three out of four Americans, may be both a friend and an enemy to our teeth (Rodgers, 2024). It contains caffeine, a chemical compound that acts as a stimulant to increase brain and nervous system activity (Better Health Channel, 2022). While caffeine helps us stay awake, it can potentially harm us by weakening bone repair. At the same time, the anticaries activity of coffee helps fight cavities, depending on how it was prepared.

While the stains from coffee are a well-known cosmetic issue, making our teeth yellow, the chemical caffeine itself may have a deeper, more structural impact on our teeth. It appears to interfere with the body's natural bone repair processes, including those for the bone surrounding our teeth. A pivotal study on this subject investigated how caffeine affects the bone tissue of rats (Moreno et al., 2024). The researchers found that caffeine consumption led to reduced bone density. This occurs due to caffeine blocking adenosine A2 receptors in the body. Normally, these receptors stimulate cells that build bone (osteoblasts) and inhibit cells that break it down (osteoclasts). By blocking these receptors, caffeine tips the scales in favor of bone loss.

The study provided more evidence for this: the caffeine-treated rats showed increased levels of specific signaling molecules (RANK and RANKL) that activate bone-degrading osteoclasts (Moreno et al., 2024). In simple terms, caffeine seems to send a biological signal that accelerates the breakdown of bone tissue. Thus, beyond superficial stains, the caffeine in our drink could potentially hinder the health of the bone supporting our teeth.

Despite caffeine's potential drawbacks for bone, the coffee beverage itself can be a surprising ally for your teeth, if you take it black without additives such as syrups. Research reveals that plain, black coffee has natural cavity-fighting properties.

How does it work? Coffee contains powerful compounds like polyphenols and melanoidins that act as natural antibacterials. They specifically target and suppress Streptococcus mutans, a bacterium found in the human mouth that causes tooth decay. As this bacterium feeds on sugars from food or drinks, it produces acid as a byproduct through fermentation, which dissolves tooth enamel and leads to cavities (McGee, 2018). By inhibiting this germ, black coffee helps protect our enamel from acid attacks.

Teeth are composed of four parts: enamel, dentin, cementum, and pulp. Devoid of living cells, the enamel is the osseous tissue that protects the dentin and pulp — soft tissue at the center of your teeth containing nerves and blood vessels ("Parts of the Tooth - Professional Dental Terminology for the Dental Assistant and Hygienist - Dentalcare"). When preparing to place veneers, dentists often shave off the enamel layer to make space for the thin shells. Since enamel is a non-regenerative tissue, filing down the enamel to make way for veneer placement may expose the soft dentin layer and the nerves running through it. Dentin is composed of microscopic tubules that can stimulate the nerve and cause tooth sensitivity if the enamel is not there to protect the tooth from very hot, cold, or acidic foods ("Parts of the Tooth - Professional Dental Terminology for the Dental Assistant and Hygienist - Dentalcare").

This isn't just a lab observation. A clinical study found that people who drank black coffee regularly had fewer cavities (measured by a lower score of Decayed/Missing/Filled Surface) than those who drank coffee with milk or sugar or those who didn't drink coffee at all (Anila Namboodiripad & Kori, 2009). Again, this was due to coffee's antioxidant polyphenols and melanoidins, compounds that inhibit the growth of harmful oral bacteria, preventing tooth decay

However, this benefit is easily cancelled out. Additives such as sugars and milk reduce this effect. Sugar gives the cavity-causing bacteria exactly what they need to produce more acid. Meanwhile, the proteins in milk may bind to polyphenols (coffee's protective compounds) covalently, reducing their antibacterial efficiency (Ma et al., 2024).

Therefore, coffee's impact depends on what we add. Let's drink it black to keep its natural cavity fighting power.

When contrasting Shoben's findings to more modern research, the causes of odontophobia are now known to be more varied than just negative family histories with dentists. Dr. Dara Bhaskar, a professor in the Department of Public Health Dentistry at Teerthanker Mahaveer Dental College, identified key factors of odontophobia in a 2015 article in the International Journal of Dental and Medical Sciences Research. These included the presence of other phobias or anxiety disorders in a patient, as well as a fear of pain. Current methods of treatment of dental anxiety are often those used for other anxieties and phobias. Some treatments include relaxation techniques and a method known as systematic desensitization, in which a therapist trains a patient to use relaxation techniques in stressful situations through a process called counter-conditioning.

Odontophobia is a relatively recent revelation, a concept created less than 100 years ago. The research on this condition is ongoing to this day, with papers being published on this topic every year. Through knowledge of the subject, a more mindful, inclusive, and welcoming dental space can be created.

Government-Subsidized vs. Company-Sponsored Dental Care

By Raffaella Wong

Government-subsidized dental coverage and employer-sponsored plans serve different populations and operate under varying incentives. Employer plans typically offer common treatment plans (preventive visits, basic restorations, sometimes major services) and broader provider networks for covered employees. A national survey conducted by KFF shows employer-sponsored coverage remaining a major source of dental benefits for working-age Americans. Public programs such as Medicaid, Medicare (limited dental in traditional Medicare) widely differ by state in what procedures are covered and in reimbursement rates; many states are expanding adult Medicaid dental benefits but with large variation between states. (ADA)

Demographically, employer plans disproportionately cover people in full time jobs with larger employers and higher incomes; lower income adults, many people of color, and the unemployed are more likely to rely on Medicaid or be uninsured for dental care. A national analysis found sizable shares of older adults and low income groups lacking stable dental coverage, and how often patients with stable dental care plans track coverage – people with dental insurance are substantially more likely to get regular preventive care. (ADA)

n terms of benefits, employer plans often provide faster, larger reimbursements and more predictable patient co-pays, which encourages participation of private dental practices. Public coverage increases access for populations otherwise unable to pay, but lower reimbursement rates and administrative burdens can limit dentist participation. It can also reduce the availability of services or push clinics to restrict high cost procedures. According to ADA surveys and state reports, some clinics have cut services when Medicaid reimbursement didn't cover costs, such as community clinics in California briefly pausing adult root-canal services because payments fell below supply and staffing expenses.

The current policies with either types of dental coverage are shaping both patients and dental practices. Recent state expansions, for example, Utah's April 2025 adult dental expansion, and federal workforce/benefit discussions advocated for increased coverage opportunities. These expansions enacted for administrative changes like work requirements and more frequent renewals. However, each state's budget pressure threatens the continuity of public coverage and may increase uncompensated care for clinics if coverage is lost. These dynamics affect patient access to preventive dental care and create financial strain or service reductions at community dental providers. (CareQuest)

Objectively, employer plans typically yield easier access for covered workers and stronger provider participation, yet government programs are essential for equity by covering lower-income and vulnerable groups – even so, their effectiveness depends on the scope of benefit and the reimbursement policy. Policymakers and patient demographics thus shape whether public coverage of dental care translates into widespread access for patients or remains limited by provider participation and funding.

"PUBLIC COVERAGE INCREASES ACCESS FOR POPULATIONS OTHERWISE UNABLE TO PAY, BUT LOWER REIMBURSEMENT RATES AND ADMINISTRATIVE BURDENS CAN LIMIT DENTIST PARTICIPATION."

Impact of Mouth Taping on Oral Hygiene

By Anna Hyun

What is mouth taping? Mouth taping involves placing tape over the mouth to prevent it from opening during sleep, with the goal of eliminating mouth breathing, which can negatively affect gum health by drying out the mouth.

Now a billion-dollar industry, mouth-taping companies such as beautysleepclub.com claim numerous positive effects of mouth taping, including improved sleep quality, increased energy, reduced brain fog, enhanced immunity, reduced inflammation, prevention of gum disease, and more. However, user reviews vary. For some, gum health improved tremendously, but snoring did not. For others, they felt less fatigue in the morning after starting to use this product.

In our mouths, saliva helps maintain oral health by neutralizing acid and preventing tooth decay that can result from extreme pH levels. However, with mouth breathing, saliva dries out, making it unable to flush away bacteria or maintain a normal pH level. Ultimately, this can cause inflammation of the gums and bones due to bacterial buildup.

Certainly, mouth breathing negatively affects overall oral health, but does blocking your mouth with tape truly prevent these risks? Although mouth taping aims to discourage mouth breathing and its negative effects, the method is not the most effective. According to Ann Kearney, a speech-language pathologist at Stanford University School of Medicine, it is much more important to have a proper tongue placement to allow better airflow through the airway. Moreover, the clinical effectiveness of mouth tape is still debated among physicians. While the benefits require further research, the risks are definite-shallow breathing, insufficient blood oxygen, and potential suffocation—especially among individuals with nasal obstructions.

"THE CLINICAL EFFECTIVENESS OF MOUTH TAPE IS STILL DEBATED AMONG PHYSICIANS."

There are more effective ways to prevent mouth dryness while sleeping. Eastern Virginia Orthodontics suggest six techniques to prevent mouth breathing , which includes clearing your nose, practicing active breathing, reducing stress and anxiety, exercising, modifying your pillows for better sleep, and using proper oral devices such as nasal strips, chin straps, and mouth guards.

In conclusion, mouth taping does not directly correlate with protecting oral health. It is important to note that only under certain conditions does mouth taping lead to the full benefits claimed by companies, and such results vary greatly depending on individual medical conditions and needs.

The Breakdown on Bruxism

By Krystal Pham

Bruxism, the repetitive grinding motion of teeth while engaging the masseter muscle, might not be known by name but is a prevalent condition that could often be overlooked. In a 2025 study, researchers have found that out of 40,000 subjects, about 21% of those subjects are affected by awake bruxism alone, meaning that approximately 8,400 subjects involuntarily grind their teeth throughout the day while awake (Stanisic et al., 2025). The root causes of this condition are known to be both psychosocial and physiological.

In addition to repetitive teeth grinding, bruxism could be classified with other symptoms such as dental fractures, implant failures, temporal headaches, and temporomandibular disorders. When excessive grinding of the teeth occurs, implementing dental techniques in order to carry out restoration becomes more difficult by consequence of osseointegration, marginal bone loss, or complications with previous dental procedures. Bruxism can overexert the muscles of the mandible leading to the promotion of muscle aches in the associated facial region, called the orofacial region. The orofacial region is important for movement, expression, and formation of speech. Different classifications of temporomandibular disorders can arise, including disorders of the joints, disorders of the muscles involved with chewing, and associated headaches.

Bruxism can be divided into two main categories, awake bruxism (AB) and sleep bruxism (SB). Awake bruxism is characterized by daytime-awake-grinding and clenching of the teeth which stem from semivoluntary activity. Conversely, sleep bruxism is characterized by the involuntary bruxism behaviors that occur during sleep. Both AB and SB impact the lives of about 20% and 8-16% of subjects within the adult population, where AB differs among gender, age, and geographical location and SB impacts the adult population regardless of demographic. Knowing root causes and general patterns of infliction could be useful for advancing treatments and research for improving the field of dentistry.

Awake bruxism is more associated with psychosocial components such as anxiety or stress from daily life, reflecting the changes within modern society and how it affects individuals psychologically. Some studies have shown that, although not directly correlated, women and young adults are more impacted by AB due to modern pressures and stressors that those aforementioned demographic groups face. However, researchers now prefer associating AB with having a biopsychosocial model which incorporates factors such as predisposed genetic disorders, including psoriasis and Parkinson's disease. These chronic diseases can add to daily stress, causing stress responses which include jaw clenching and teeth grinding.

Sleep bruxism has been more associated with physiological components, where it more indiscriminately impacts an adult population. During sleep, the brain undergoes multiple sleep stages where there's an "arousal response" which is defined as a change in the depth of sleep, either marking the N2 sleep stage (light sleep) or the actual waking-up. During these periods, bodily movements are at a high, where there's an increase in muscle contractions and respiration. Physiologically, the mechanism behind it involves a pair of pathways, one sending neurological signals to the thalamus and to the cerebral cortex, and the other having an indirect pathway through other nuclei. If these pathways are disturbed, an increase in these dopamine precursor molecules, L-dopa, will transpire which could increase muscle movements associated with bruxism. Other molecules which can directly or indirectly increase dopamine concentration have been shown to increase bruxism.

As we continue practicing our oral routines, comprehending our dental health beyond our regular mouthwashing sessions, flossing techniques, and whitening strip days can be beneficial. Although maintaining control of habits proves to be a daunting task, spending some time educating ourselves and practicing better habits could prevent bigger issues, saving yourself another visit. Bruxism, an "under-the-radar" type of condition, is entirely preventable through small steps and reaching out for proper diagnoses. By the way, unclench your jaw.

Oral Health for Astronauts in Space

By Pritha Trivedi

Brushing your teeth on Earth is effortless - turn on the tap, squeeze some toothpaste, and rinse. In space, though, even simple routines become complex. With microgravity, water floats away, toothpaste must be swallowed, and a small cavity can turn into a serious emergency. To prevent this, astronauts undergo rigorous dental screenings before launch, use specially designed toothbrushes and edible toothpaste in orbit, and follow a low-sugar diet that protects their teeth. Maintaining oral health in microgravity isn't just about fresh breath - it's vital for keeping astronauts healthy and mission-ready hundreds of miles above Earth.

Astronauts undergo strict dental screening before missions. They're categorized into three oral health classes. Class I astronauts are those with excellent oral health. They don't require any treatment for at least 12 months. Class II astronauts are those with minor dental issues that have to be treated, but are unlikely to cause additional problems post-treatment within a year. Class III astronauts are those with dental conditions that will likely need a follow-up within 12 months and could lead to complications (Delta Dental).

Only Class I astronauts are cleared for spaceflight because even the smallest untreated oral health issues can become a major problem in orbit. During launch, astronauts experience powerful pressure changes and up to 3-4 G-forces. These shifts can cause pain in untreated teeth or even loosen crowns and fillings. Plus, astronauts are estimated to lose an average of 1% of their bone mass over time in microgravity - a seemingly small but important factor that can weaken the jawbone, reduce tooth stability, and increase the risk of gum recession or tooth loss during long missions.

If an astronaut develops a serious dental emergency in space, their options are limited. Minor issues can sometimes be managed on board using special dental kits. However, in extreme cases, they may have to return to Earth early which can be a very costly and complicated procedure.

That is why prevention is key long before the rocket ever leaves the ground as well as good oral hygiene habits in space.

Maintaining oral hygiene in space takes creativity. ISS commander Chris Hadfield demonstrated his space brushing routine: He starts by squeezing a tiny droplet of water from a special sealed pouch onto his toothbrush since there are no sinks or running taps. He then adds toothpaste carefully before it floats away and brushes as usual. Here's the twist: he can't spit. Instead, he swallows the toothpaste and water mixture which is specially designed to be safe to ingest in small amounts. To "rinse" his toothbrush, Hadfield takes another sip of water, swishes it with the brush still in his mouth, and swallows again. It's not glamorous, but it works. (Hadfield, C., 2013).

Astronauts' meals are also designed to protect their teeth. Space food is typically low in sugar, which helps prevent cavities. They also eat softer, pre-packages foods that minimize the chance of food getting stuck between teeth - a small but important detail when dental care in space is limited and minor problems can escalate quickly (Cascade Dental).

Oral health in space may look different, but the goal remains the same: keeping astronauts healthy, comfortable, and mission-ready. Whether brushing with floating droplets or swallowing toothpaste, astronauts prove that even 250 miles above Earth, a clean smile still matters.

From Gums to Grey Matter: Why Dental Hygiene Could Save Your Brain

By Anika Jain

While brushing and flossing your teeth are inevitably important to prevent cavities and maintain fresh breath, some may not realize that this simple daily ritual can defend their brain from developing one of the most devastating diseases of aging: dementia.

Recent research uncovers a surprising discovery: the health of your brain and mouth is deeply intertwined. Issues like gum disease and tooth loss extend beyond the mouth and may increase your risk of developing diseases like Alzheimer's and other forms of dementia.

When bacteria known as Porphyromonas gingivalis invade the gums, they cause chronic inflammation that damages tissues and erodes bone meant to support the teeth. With gum disease, the gums bleed more, allowing for the bacteria to enter the bloodstream and reach the brain. In the brain, they accelerate the build-up of amyloid-β plaques, which are pungent protein clusters known to be associated with Alzheimer's. Amyloid-β plaques are known to disrupt the communication between brain cells, leading to neuron death and memory loss. Additionally, the long-term inflammation of gums can disrupt the blood flow to the brain by limiting oxygen and nutrient flow and damaging blood vessels, contributing to vascular dementia.

Unfortunately, the damage can extend further than you may expect. Tooth loss can make chewing especially difficult and further impact the intake of essential nutrients like B12 and omega-3 fatty acids, as well as decreasing blood flow to regions of the brain used for memory and information storage. A study done in 2020 found that older adults with significant tooth loss were 1.48 times more likely at risk of developing cognitive impairment and 1.28 times more likely at risk of being diagnosed with dementia. However, the study also found that there was no significant increased risk in patients who suffered tooth loss but had timely prosthodontic treatment done (e.g., dentures, implants), showing that timely treatment can significantly reduce the risk and progression of cognitive decline.

The good news is that it is under your control and preventable! Brushing and flossing daily, eating nutrient-rich

foods, and making regular dental visits will not only keep your smile clean and shiny, but also reduce inflammation and help preserve cognitive function.

Here are some tips that you may thank yourself for later on:

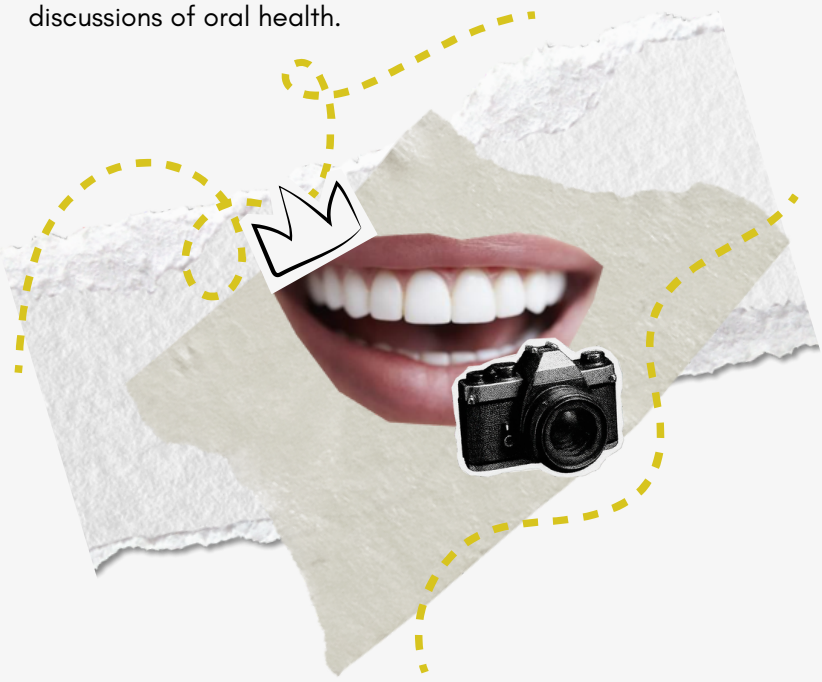
- Brush TWICE a day, using a fluoride toothpaste.
- Floss every night to prevent gum inflammation. Remember, bacteria go to work at nighttime!
- Replace your toothbrush or toothbrush head every 3 months.
- Eat brain-boosting foods including nutrients like omega-3s, vitamin C, and antioxidants.
- Visit your dentist at least twice a year.

Your mouth functions as a gateway to your mind. Simple habits and a proper dental routine could mean remembering the people and moments that matter the most to you tomorrow.

The Growth and Influence of Cosmetic Dentistry

By Maya Tedini

Cosmetic dentistry, the sector of dental care that generally aims to provide aesthetic treatments for the smile, has seen rapid growth in recent years, especially in North America. As technological developments progress and patient interest continues to rise, the benefits and consequences associated with this growing field are drawing greater attention in discussions of oral health.



The cosmetic dentistry market is expected to grow at a compound annual growth rate of 13.5% percent from 2023 to 2030. New technology is one of the foremost sources of its recent growth. Techniques like microabrasion, resin infiltration, and soft tissue lasers have allowed for the performance of countless smile-enhancing procedures through minimally invasive approaches, supporting patient recovery and comfort. Furthermore, digital smile design and 3D printing allow for intricately personalized work and ultra-precise prosthetics. Dental materials like composite resins and ceramics have also significantly advanced to mirror the natural enamel's light reflection, further making cosmetic treatments more desirable and customizable, according to Incredible Smiles.

A source of increased demand for cosmetic dental procedures particularly specific to middle-income countries is the growing consumption of sugary foods and beverages that can lead to tooth decay, according to Grand View Research. The World Health Organization Global Health Status Report in 2022_revealed that nearly 3.5 billion people across the globe were affected by oral diseases, with three in four affected individuals being residents of middle-income countries.

Preventative dental care is highly prioritized in the United States, according to Delta Dental. Though there is more to oral health than the appearance of the teeth, the fact that American media values a healthy, straight, white smile has prompted more people to think about dental care and functional improvements, according to Urban Splatter.

These benefits, however, also elicit a discussion surrounding the potential consequences of cosmetic dentistry's expansion. Celebrity culture, social media, and internet trends can also be cited as catalysts for the rise of cosmetic dentistry. With the popularization of the wide, bright "Hollywood smile," many patients seek procedures like veneers when they aren't medically necessary.

Veneers involve shaving the natural tooth enamel in order to place a custom "shell" over the tooth (Cleveland Clinic). There is often criticism surrounding the prepping of healthy teeth for this procedure.

However, new technology has allowed for less invasive approaches to smile enhancements like prepless veneers. Still, many patients are inclined to seek over-treatment and almost unnatural hues of white in a desire to replicate the "perfect" smiles presented through various media (BMC Medical Ethics). This has presented dentists with an important role in considering ethics over profits and helping to guide patients in making decisions that benefit their aesthetic goals without compromising their oral health.

Many Americans also consider traveling outside of the country for elective dental procedures due to high costs in the United States. North America has dominated the cosmetic dentistry market, accounting for a revenue share of 40.0%, according to Grand View Research, but dental tourism has contributed to the market's increased global prosperity. However, handfuls return with oral health issues due to a lack of premium materials and strict standards regulated across all dental practices, highlighting the importance of educating patients on prioritizing their health above aesthetic wishes (Albion Family Dental).

Despite these effects, cosmetic procedures like implants and composite bonding can also be used to help patients who, for example, have broken teeth severely in traumatic accidents, restoring their confidence and supporting them in recovering both physically and mentally. This demonstrates the delicate balance between supporting design objectives and sound decision-making required to promote the growth of cosmetic dentistry in an ethical way.

Especially as technology continues to see transformative advancements, cosmetic dentistry can only be expected to further expand as it becomes more accessible and convenient. With appropriate doctor-patient communication in crafting intentional, personalized approaches to cosmetic enhancements that prioritize treatments that will last, cosmetic dentistry has the potential to continue to transform patients' confidence and promote oral health.

Endodontics vs. Extraction: Why Saving the Tooth Matters

By Kevin Lam

What if removing a single tooth could quietly reshape your entire jaw? While extractions end pain quickly, they also start a process of bone loss that changes the mouth forever. Thanks to modern endodontic therapy, dentists can now save natural teeth with remarkable predictability, maintaining both function and facial structure. Endodontic therapy and tooth extraction are two common approaches to manage dental pain and infection. Both aim to eliminate disease and restore comfort, but their long-term consequences differ substantially. This article explores the evidence-based reasons why keeping a natural tooth is often the most sustainable choice.

While tooth extraction can effectively eliminate pain and infection, it often initiates a cascade of long-term harmful effects that extend beyond the immediate relief it provides after a single extraction. Clinical studies have shown that within the first year following tooth extraction, the alveolar bone can lose up to 50% of its width, leading to ridge collapse and a reduction in the tooth's visual appeal. This bone loss is irreversible because the periodontal ligament (PDL), which physiologically stimulates bone growth, is permanently removed during extraction. Moreover, when we chew or bite, the PDL helps to mediate these forces to the bone, which keeps it active and prevents it from shrinking. It also contains tiny blood vessels and nerves that help with sensation and blood flow around the tooth. When a tooth is removed, such stimulation and support are lost, causing the bone to weaken and shrink over time. Ultimately, it will lead to bone resorption and ridge loss (Araujo & Lindhe, 2005).

The functional consequences of tooth loss extend further. Reduced dentition directly diminishes chewing efficiency, which can restrict dietary choices and contribute to nutritional imbalances, especially in older adults. Multiple studies have found correlations between extensive tooth loss and increased systemic inflammation, suggesting a potential link to higher risks of cardiovascular and metabolic diseases.

Unlike extraction, endodontic therapy preserves the PDL, preventing the bone resorption cascade described earlier. According to the Journal of Biology and Craniofacial Research, the preservation of the PDL through endodontic therapy sustains normal masticatory forces (the force generated by the jaw muscles during chewing to break

down food) and helps retain the functional relationship between teeth and bone. The PDL not only anchors the tooth but it also acts as a living interface that provides the mechanical stimulation, nutrient exchange, and sensory feedback which is very important for jawbone health. This biological advantage highlights why saving the natural tooth through endodontics is a more efficient and conservative approach than extraction.

Endodontic therapy, commonly known as root canal treatment, has evolved dramatically through advances in dental technology. Modern instruments such as operating microscopes, ultrasonic devices, and biocompatible sealing materials have improved precision and reduced procedural complications. A study by Friedman & Mor (2004) in the Journal of the California Dental Association reported success rates exceeding 90%, attributing outcomes to enhanced magnification, improved debridement (the removal of necrotic tissue), and effective sealing techniques. These developments allow teeth previously that were considered non-restorable to be saved predictably. In short, the clinical success of endodontic therapy demonstrates that preservation is both feasible and very effective. It offers patients long-term function while minimizing the need for more invasive treatments like implants or bridges.

In the end, the question to either save or remove a tooth comes down to more than just eliminating pain. It is about preserving what nature designed to last a whole lifetime. Advances in endodontic therapy now allow dentists to heal infection, protect bone structure, and restore normal function with success rates exceeding 90%. By contrast, extraction may offer quick relief but often has a long-term effect on your teeth. Each natural tooth plays a vital role in maintaining the harmony of the mouth, and whenever restoration is possible, saving the tooth is the most biologically, and functionally sound decision in modern dentistry.

Vaccinating Along the Sulcus

By Katie Lui

Waiting in the back of a local pharmacy clinic, you dread the rolling of your sleeve, the sharp scent of rubbing alcohol, and the small, inevitable pinch. For many, that annual sequence-compounded by fear, time, and cost-becomes enough reason to defer vaccination. Imagine, instead, if we could integrate prevention into a familiar, low-friction oral care context. Vaccines administered via floss could reduce unsafe injection practices while eliciting a stronger, more reliable immune response.

This new scientific premise rests on a uniquely permissive target: the junctional epithelium lining the gingival sulcus. Unlike the relatively impermeable buccal and sublingual mucosae, the junctional epithelium is intentionally "leaky". Its permeability supports a constant, bidirectional exchange with the oral environment; a defensive adaptation that allows surveillance cells to detect and respond to bacterial influx. Immediately beneath this epithelium lies a dense front of neutrophils and antigen-presenting cells, making the gingival sulcus the most ideal place to deliver a vaccine. Delivering the antigen at this site would position it to be primed for rapid uptake, processing, and presentation.

By coating the floss with antigen, clinicians can guide the material precisely into the sulcus, maximizing contact time with junctional epithelium. Early experiments indicate substantially enhanced antigen retention at the delivery site: fluorescently tagged proteins persist for more than 48 hours beyond what is achieved with oral drops (Ingrole et al., 2025). Because the application sits within the gingival crevice rather than on the tongue or cheek, the formulation appears resilient to disturbances from eating and drinking, removing a major compliance hurdle that has historically undermined oral mucosal vaccines. This longer residence time, coupled with close proximity to neutrophils and dendritic cells, increases the likelihood of durable priming, and it does so without requiring behavior changes such as post-medication fasting.

Practical advantages of vaccines administered via floss may be equally as transformative. After further development, floss-delivered vaccines could be dispensed in dental clinics and community settings during routine cleanings, school dental screenings, or mobile oral-health visits-providing accessibility to patients where they already seek care. Vaccine formulations that do not require strict cold-chain conditions simplify storage and transport, making the platform lower maintenance and more affordable, without sacrificing effectiveness. Additionally, avoiding needles

emoves risks of needlestick injuries, needle reuse, and sharps waste management-issues that disproportionately burden low-resource settings. Standardized application tools, primed floss picks, and brief training modules could make delivery consistent across providers while maintaining a high level of quality, a requirement crucial for scaling vaccine administration up during seasonal or outbreak-driven surges.

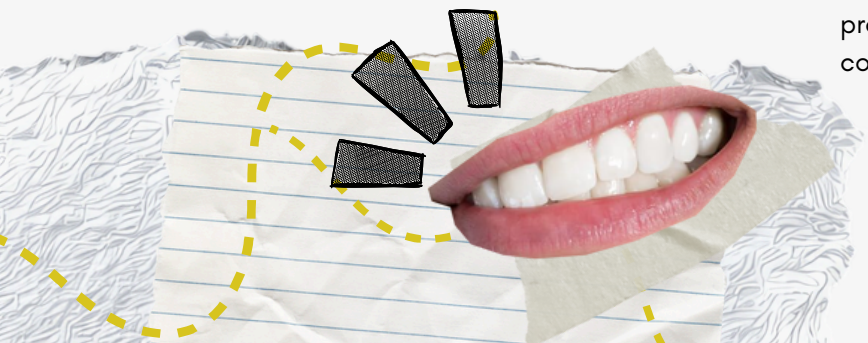
If the next rounds of studies confirm safety, durability, and standardized delivery, floss-based vaccination could move from proof-of-concept to everyday practice-transforming routine cleanings into a built-in layer of protection. By pairing dentistry's reach with immunology's precision, this platform offers a path to broader access, fewer barriers, and stronger community immunity. With more trials, training, and regulations, a future where prevention is woven into oral care is imminently achievable.

Dry Socket: A Problem After Wisdom Teeth Removal

By Mihir Gill

The extraction of wisdom teeth is a procedure commonly performed by dental professionals. With invasive surgeries like tooth extractions, patients may incur post-procedural complications - one of which is known as dry socket. A dry socket occurs when a blood clot forming over a tooth socket gets displaced. This may lead to extreme pain due to nerves and bone being exposed (ADA). Some common symptoms of a dry socket include pain radiating from the socket to one's ear, eye, and neck from the side of the mouth where the extraction site resides. Other symptoms include bath breath, baste taste in the mouth, and a fever, which could indicate an infection (Harvard Health Publishing).

Though the cause of a dry socket has yet to be fully understood, some procedures and lifestyle habits put certain patient demographics at higher risks of developing this painful condition. These include having the lower wisdom teeth extracted (dry sockets commonly occur in the lower jaw), smoking or chewing tobacco, and having undergone a difficult tooth extraction procedure that caused complications.



Nonetheless, there is no cause for concern as there are solutions to this problem. A dentist provides treatment for a dry socket as follows: "an anesthetic to numb the area, clean it out with a sterile rinse, then fill the socket with a medicated paste" (Harvard Health Publishing). This medicated dressing or paste contains numbing agents, like lidocaine or eugenol. Moreover, if an infection has occurred, dentists may prescribe antibiotics and for pain relief they may advise the patient to take pain medications, like acetaminophen or ibuprofen (Cleveland Clinic).

To prevent a dry socket in the first place, Dr. Tien Jiang DMD, oral health policy and epidemiology assistant professor at Harvard School of Dental Medicine, advises that patients should avoid applying negative pressures in their mouths, like spitting instead of drooling, and drinking through a straw post-procedure. Diet modifications like not consuming foods that are sticky, crunchy, or have small pieces for several weeks after the procedure can help prevent food from getting stuck in the tooth socket. Furthermore, Dr. Jiang advises patients to contact their dentist if they experience heightened pain that does not subside after taking pain medication to ensure proper healing of the tooth socket.

3D Printing Within Dentistry

By Susie Choi

3D printing, a familiar term by now in the field of computer or mechanical engineering, has also begun to transform the fields in dentistry in various and remarkable ways. The main application of 3D printing in dentistry lies in creating highly customized dental devices such as crowns and bridges through the use of advanced 3D scanning techniques that allow precise measurements and details to be taken from the patient.

Dentists are able to use various 3D printing methods, each with their own pros and cons, to best fit the needs of the patient. Method of **Stereolithography (SLA)**, for instance, cures layers of liquid resin to build detailed and accurate dental models, but does take time in individually curing the layers. Another method, **Digital Light Processing (DLP)**, uses rapid flashes of light to cure entire layers for faster production, however with the price of a reduced resolution compared to SLA.

These differing 3D printing technologies are used within various dental specialties such as prosthodontics, implantology, oral and maxillofacial surgery, orthodontics, endodontics, and periodontics. Although differing between specialties, 3D production is used to create precise crowns, implants, and bridges that are customized to individual patients, at a faster creation rate than previous methods, and also create surgical guides that improve accuracy and reduce errors during oral and dental surgeries.

As 3D printing technology improves at a rapid speed, the dental field is advancing as well, adapting and researching further into use of 3D printing within dentistry. Currently, there is already hope and expectations forward in 4D printing technology that will create a more dynamic material, better able to respond to stimuli or change within the mouth to support long-term oral health and patient satisfaction.

Impact of Clear Aligners on Oral Bacteria

By Katlyn Ong

Clear aligners like Invisalign are becoming an increasingly popular alternative to traditional braces for maximum convenience, comfort, and discretion. The rise in clear aligners is accompanied by questions about their impact on the oral microbiome and how this differs from traditional braces. While clear aligners can be removed and are easier to keep clean, this does not exempt them from bacterial buildup and the necessity of proper dental apparatus hygiene.

The goal of clear aligners is to align teeth similarly to traditional braces. However, instead of metal brackets being attached to teeth and adjusted every 4-8 weeks, clear aligners are custom-made plastic trays created from a scan of the patient's teeth. These plastic trays fit snugly, applying enough pressure to gradually move teeth into the desired position. Instead of visiting the orthodontist to tighten brackets, patients are given a set of trays that are sequentially more similar to the teeth's target orientation. Each tray is worn for 1-2 weeks before progressing to the next tray, giving the teeth time to adjust to each gradual shift. Aligners are worn at all times, excluding when eating, drinking, flossing, and brushing.

Being able to take clear aligners off when eating or for cleaning makes their upkeep seemingly easy. However, the interplay between clear aligners and the oral microbiome is more complicated than simply keeping the aligners away from food. Covering teeth with plastic trays significantly reduces the amount of saliva able to reach the teeth, reducing saliva's ability to rinse away bacterial accumulation. Studies conducted at the ADA Forsyth Institute examined patients with clear aligners who had progressing gingivitis and attributed the progressing gum disease to three oral bacteria species: Saccharibacteria, Schaalia odontolytica, and Fusobacterium nucleatum.

Saccharibacteria attach to the surface of S. odontolytica and are predicted to interact with F. nucleatum, bacteria known to contribute to periodontitis under certain conditions. The oral environment created by clear aligners is conducive to allowing F. nucleatum to thrive, increasing not only its chance of contributing to gum disease but also potentially increasing the Saccharibacteria and S. odontolytica populations. Although clear aligners minimize pathogenic bacteria compared to traditional braces, bacterial buildup is still of genuine concern.

Despite how well a patient cares for their aligners, the grooves lining the apparatus, coupled with damages such as microcracks and abrasions that are bound to occur, create an environment where bacteria thrive. It is crucial to clean aligners properly to prevent bacterial accumulation. Rinsing clear aligners with water after removing them is beneficial in keeping them clean throughout the day, but it is not sufficient in keeping them clean long-term. The most successful strategy for cleaning clear aligners is a combination of mechanical and chemical cleaning, usually a combination of brushing the aligners and soaking them in a cleaning solution daily. While many patients opt for clear aligners in lieu of traditional braces, bacterial buildup is still of major concern, necessitating the proper maintenance of the dental apparatus.

Bye-Bye Binky

By Amrin Gill

For many infants and toddlers, thumb sucking and pacifier use are comforting habits that help them feel secure and soothe themselves to sleep or calm down in times of distress. These behaviors are completely natural in the early months and often fade away on their own. However, when these habits persist beyond the toddler years, they can begin to affect a child's dental development-making the habit harder to break, increasing the likelihood of dental misalignment, and potentially leading to more frequent visits to the dentist.

Prolonged thumb sucking and pacifier use can lead to malocclusion, or misaligned teeth and jaws. Children may develop an open bite, where the front teeth don't meet, an overbite with protruding upper teeth, or a narrow palate that crowds permanent teeth. These changes can also affect speech, causing lisps (Fritz & Wilson Orthodontics). Such issues often require orthodontic treatment and can impact a child's confidence.

Helping a child wean off pacifiers can be challenging but is achievable with patience. According to pediatric dentist Dr. Christianson, some strategies include praising and rewarding them when they refrain, offering alternatives like a comforting stuffed animal, and identifying triggers such as fatigue or anxiety. According to Nurse Cara Dumaplin-who is a Certified Pediatric Sleep Consultant-on *Taking Cara Babies*, gradually limiting pacifier use to only naptime or bedtime before eliminating it completely can help. Age-appropriate conversations, children books, and involving kids in the process-like decorating a box for pacifiers-also make the transition smoother (brookhavenchildrensdentistry.com).

If a child continues these habits beyond the age of three, or if there are visible concerns of an open bite or misalignment, it's a good idea to consult with a pediatric dentist. Addressing these issues early can help prevent more serious dental problems down the road, when they become more serious.

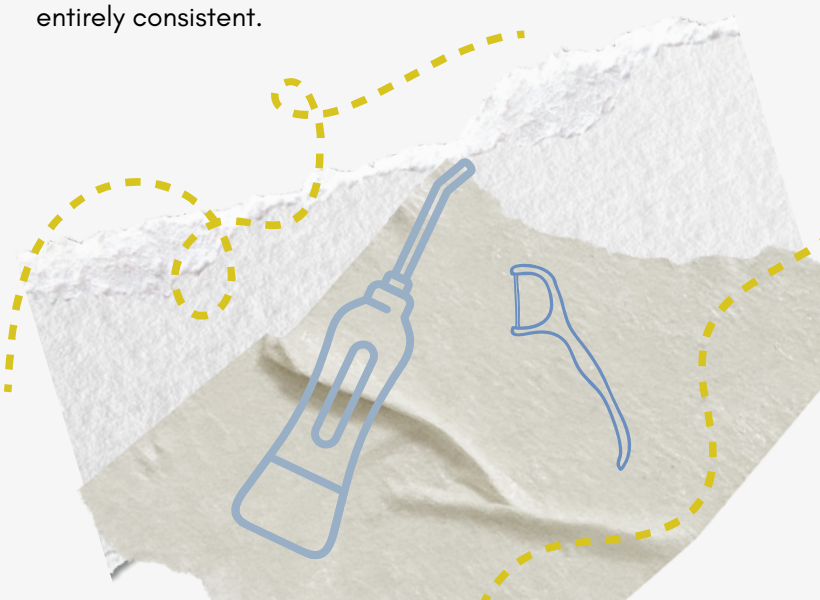
While oral fixation habits are natural behaviors to explore their motor skills and elevate stress, it's important to monitor the duration in which a child takes part in this activity. Early intervention can prevent potential dental issues and support a child's healthy development. Remember, consistency and positive reinforcement are key in helping children break these habits.

Flossing vs. Water Flossers: Everything to know + which is better?

By Ria Bansal

Interdental cleaning—i.e. removing plaque and biofilm from between teeth beyond what a toothbrush can reach—is a key component of effective oral hygiene. Traditional string floss has long been the standard recommendation. However, water flossers have gained popularity in recent decades as an alternative to flossing, especially for people with braces, implants, or limited dexterity. The core question many patients and clinicians face is: which is better in practice? The answer depends on the clinical outcome (plaque reduction, gingival inflammation, and bleeding), patient adherence and technique, cost, and particular oral health situations.

Plaque removal is often the first metric used to compare flossing and water flossers. A recent systematic review (2022) that screened multiple randomized controlled trials (RCT) found that most included studies favored water flossers over floss in terms of interdental plaque reduction, especially in hard-to-reach or inaccessible areas. Yet, heterogeneity in study designs—single use vs. multi-week, split-mouth vs. parallel, and different plaque indices—makes comparison difficult. In one split-mouth pilot RCT, water flossers and floss both achieved 87-89% plaque reduction on single use, with no significant difference between the two groups. The evidence suggests that water flossers often match or slightly outperform floss in plaque removal, particularly in less accessible areas, but results are not entirely consistent.



Bridging the Gap: Teledentistry and Equal Access to Oral Healthcare

By Sarah Jeon

Imagine being able to receive a dental consultation, review your X-rays, or get professional advice on a toothache, all without leaving your home. This is the promise of teledentistry, a rapidly growing field that merges dental care with modern communication technology. By enabling virtual interactions between dental professionals and patients, teledentistry has become an effective solution to many challenges faced in modern oral healthcare. It mitigates the need for frequent in-office appointments by allowing for remote diagnosis, preventive care guidance, and follow-up consultations. This approach not only improves access for individuals in rural or underserved areas but also reduces costs, waiting times, and travel-related barriers. In doing so, teledentistry enhances the efficiency and equity of dental care delivery while maintaining the quality and continuity of treatment.

eledentistry offers a practical solution to many of the oral health challenges seen in rural communities. The causes of poor oral health in these areas are complex and interconnected. Limited access to dental professionals, long travel distances, and lower rates of dental insurance all contribute to unequal care. By allowing patients to consult with dentists remotely through digital platforms, teledentistry helps remove some of these barriers. For many rural residents, getting to a dental office can require taking time off work, arranging transportation, and traveling long distances. Virtual visits help ease these burdens by providing a more practical option to patients. During the virtual visit, dentists can evaluate conditions and offer advice. This makes it possible to catch problems early, offer preventive care, and reduce the need for emergency visits later on (Park et al., 2025).

Beyond improving access, teledentistry also encourages continuity of care. Patients who might otherwise skip follow-up appointments can stay connected to their providers, making it easier for them to manage ongoing treatments and maintain better oral hygiene habits. In the long term, expanding teledentistry could help narrow the gap in oral health outcomes between urban and rural areas, creating a more fair and efficient healthcare system overall.

Specifically, teledentistry is bridging a gap in the orthodontics industry. Invisalign usually requires the patient to visit the dental office biweekly to make adjustments to their retainer, which is often a time consuming process. By creating mobile applications, like the Dental Monitoring (DM) mobile application, the patient's progress is virtually tracked, minimizing the patient's time spent traveling to and from the office-something that appeals to younger patients and their parents. In fact, Dental Monitoring (DM) mobile application was found to reduce in-office visits by an average of 3.5 appointments (33.1%) through virtual patient-provider communication during Invisalign treatment (Hansa et al., 2021). Also by tracking their biweekly progress of the Invisalign treatment, viewing their past scans, and seeing the progression of their teeth becoming more aligned, the patient can become more motivated to be accountable for wearing their Invisalign retainers and continue to make progress. Compared to seeing scans once in two weeks in their in-person visit, the patient can now see their scans whenever they want, allowing full virtual access.

The Truth Behind the Whiter Smile

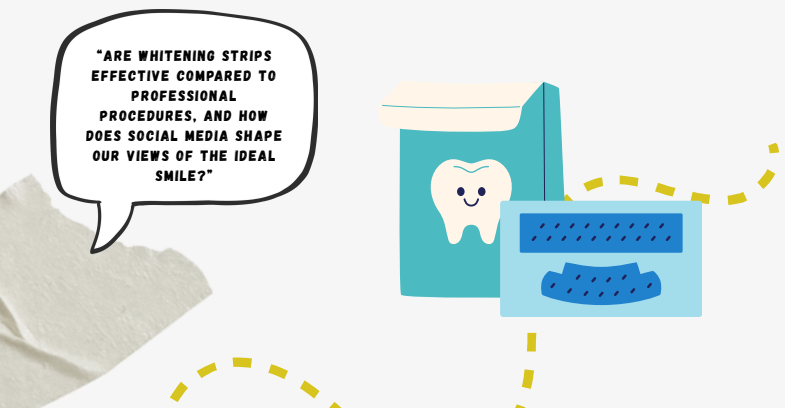
By Farah Al-Tameemi

Have you ever found yourself picking up a box of whitening strips at a store and wondering if it would be worth the investment? According to Fortune Business Insights, the market value of whitening strips in 2025 is about $8.93 billion. The industry is predicted to grow to $12.77 billion by 2032, showcasing the immense rise in popularity of at-home whitening products. A big reason why teeth whitening has become so popular is that people can do it at home for their convenience. Nowadays, social media promotions and sponsorships have also made it the norm to have perfectly white teeth. The main question is: Are whitening strips effective compared to professional procedures, and how does social media shape our views of the ideal smile?

Teeth whitening strips essentially remove extrinsic (outside of the tooth and affected by environment) and intrinsic (inside the tooth and affected by genetics) staining on teeth by bleaching the stains with hydrogen peroxide or carbamide peroxide. The peroxide in whitening strips go through the outer enamel and into the deeper dentin layer of the tooth, where it bleaches the stain causing colored molecules. Whitening strips come in the form of plastic strips coated with the gel containing the peroxide. Placing them on your teeth reacts with chromogens on your enamel, the pigments, which breaks them down to make enamel appear whiter. As of 2025, popular brands include Crest 3D whitestrips, Zimba, and Hismile PAP+ Strips, all of which have varying degrees of effectiveness and comfort. Excessive use of any of these brands can cause dehydration of the enamel, and mild sensitivity.

So what are the risks of using these cost-effective strips on oral health? For starters, according to the American Dental Association, overusing these strips can wear down the enamel, in which users may experience extra sensitivity to hot or cold food and drinks. To add on, the peroxide in this product can make weak spots in the enamel, becoming more thin or see-through, showing the yellow layer underneath. Furthermore, frequent bleaching causes erosion to the enamel - once gone, it never comes back, and users are thus more vulnerable to cavities or chips in the teeth.

Despite the cost-effectiveness and “trustworthy” branding, professional cosmetic procedures with your dentist are immensely better than over-the-counter whitening. For one, dentists are trained to evaluate the health of your teeth and gums, making them incredibly skilled in determining how your teeth will handle the materials used to break down the stains. Aspects like enamel thickness, gum health, and sensitivity levels all play a role in determining whether a patient is fit for the procedure. Therefore, only professionally applied whitening treatments can offer the safe use of peroxide without causing erosion or sensitivity. Additionally, based on a dentist's evaluation, the procedure is tailored to each patient - customizing the concentration of the whitening gel, protecting soft tissues or even targeting discoloration on each tooth at a more precise level.



Ultimately, the rise of curated dental aesthetics on social media has redefined what many perceive as a “perfect smile.” Because such procedures are so frequent and normalized on our screens, the showcasing of perfect smiles through filters, veneers, or whitening can encourage and lead individuals to overlook the foundation of oral well-being: healthy gums, enamel integrity, and consistent hygiene. What's infinitely more important than looks is health, because without healthy gums, teeth can be exposed to infections and diseases. An “ideal” smile is not one that is frequently replicated online, but one sustained by care, prevention, and respect for the body’s natural balance.

Oral Health Issues that Affect Speech

By Katie Tang

The seemingly simple phrase, "She sells seashells by the seashore," quickly reveals the difficult nature of speech when spoken repeatedly. What makes this tongue twister so challenging is the interchanging of two similar sounds: “s” and “sh”. For some individuals, however, the difficulty is constant, a common speech impediment known as a lisp, defined as "a speech defect where the "s" and "z" sounds are pronounced imperfectly, often by replacing them with a “th” sound" (Merriam-Webster). Typically such issues are caused by tongue ties, when a tongue’s movement is restricted making it difficult to make proper sounds. However, a major cause of this imperfect pronunciation lies in the function and structure of the teeth. The teeth serve as critical instruments that determine a variety of phonetic productions.

he basic mechanisms rely on the teeth working synchronously with the tongue and lips to control the airflow out of the mouth. This control is compromised when the dental alignment is imperfect, as demonstrated by the categories of dental-related phonetics:

- Dental Consonants: Sounds that are produced when the tongue is placed directly against the upper front teeth, e.g. “th” sound in think.
- Interdental Consonants: Sounds formed by placing the tongue between the upper and lower front teeth, e.g. "th" sound in teeth
- Denti-alveolar Consonants: Sounds produced with the tongue positioned against both the alveolar ridge and the upper teeth, e.g. “t” and “d” in “top” and “dot”.
- Dental Fricatives: Sounds produced by creating friction as the air passes near the teeth,e.g. “f” in “fair”.

To understand teeth's role, try saying the "s" sound and notice how the front teeth naturally come together. Now, try to produce the same "s" sound without the front teeth coming together; the sound is restricted, resulting in a whistling or slurring effect. This simulates the impact that missing or misaligned teeth have on the formation of simple sounds that require an exiting airflow.

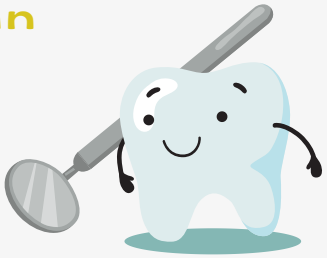
Structural dental problems including missing teeth, misalignment, crowding, or worn out teeth can all prevent the clear articulation of words. This inability to create dental phonetics not only causes lisps, but can also lead to other issues such as slurring and whistling while speaking. Fortunately, this problem, which affects approximately 5-10% of the U.S. population, particularly children, is highly treatable. Related solutions involve:

1. Speech Therapy: Speech-language pathologists use crafted exercises to teach the individual the correct way to move their tongue, lips, and teeth to produce specific sounds.
2. Orthodontics: Orthodontists can physically adjust the teeth into proper alignment, ensuring the correct airflow and natural resting formation of the mouth.

The clarity and precision of language is directly linked to the physical state of the teeth. The executing of day-to-day conversations depends greatly on the teeth fulfilling their role as speech articulators along with the lips and tongue. Maintaining dental health is therefore not only for cosmetic concerns, but also communication issues.

Is aging the true cause of dental related issues?

By Allen Bryan



Many people assume that tooth decay, gum disease, and tooth loss are simply inevitable parts of growing older. Yet the evidence and leading dental experts say otherwise. Aging itself isn’t the villain behind worsening oral health. Instead, it’s the complex mix of medications, chronic illnesses, and physical or cognitive limitations that often come with age.

Over the past two decades, adults over 65 have been keeping more of their natural teeth than ever before. That’s the good news. The challenge, however, is that the teeth that prevail are now exposed to additional decades of constant wear, increased medication use, and evolving health conditions that can quietly undermine oral health. “Hundreds of medications can cause disturbed salivary flow,” said Dr. Elisa Chavez, professor at the University of the Pacific’s Arthur A. Dugoni School of Dentistry in San Francisco. “Often, people aren’t thinking about it or it doesn’t strike them as critical. But these are things that can increase risk of developing cavities” (Vaziri, 2025).

Medication-related changes like reduced saliva, known as dry mouth or hyposalivation, affect over 30% of adults over 60 and create the perfect conditions for decay. Saliva protects teeth by washing away food particles and neutralizing acids. When it’s lacking, bacteria thrive. Medications for common conditions like high blood pressure, depression, or allergies often cause this effect, leaving older adults vulnerable even if they maintain good brushing habits.

Chronic illnesses add another layer of complication. Gum recession, for instance, naturally increases with age, exposing the roots of teeth to decay. “The average 70-year-old is more vulnerable to decay because of gum recession than a 7-year-old,” said Dr. Don Curtis, a professor at UCSF School of Dentistry. Exposed roots are softer and decay faster, especially when plaque builds up in hard-to-clean areas. Conditions like diabetes and heart disease can also heighten inflammation and weaken the body’s defense against infection, compounding oral health challenges.

Physical and cognitive limitations can further disrupt oral care. Conditions such as arthritis or tremors make brushing and flossing difficult, and cognitive decline can lead to missed hygiene routines altogether. “For patients who have significant cognitive issues, having regular dental visits is important because they may not be able to identify things like a well older adult would,” Chavez said. Still, she emphasizes that poor oral health is not inevitable. “You can maintain good oral health,” she said. “The thing is to identify risk factors, the presence of chronic diseases that result in loss of ability to care for yourself or get regular care, and medications that can have an impact.”

In other words, teeth don’t fail because of age. They fail because of neglect, preventable conditions, and overlooked side effects. Staying informed, communicating with your dentist, and adapting your oral care as your health changes are the real keys to keeping your smile strong for life.

grillz (more harm than a fashion statement)

By Diya Modi

Grillz are a strong symbol of style and self-expression. Originating in the 1980s during the hip-hop era, the popularity of grillz has grown again as famous celebrities and influencers, such as Michael B. Jordan, engage in popular trends such as “You have Something in your Teeth” on TikTok. The rise of grillz on social media by celebrities and influencers has boosted their popularity among the general public. Many people enjoy the creative freedom grillz provides, as a way to enhance their own self-expression and personal style.While grillz are desired for their flashy appearance, the wearer must be aware of the oral health implications behind them before falling victim to it being just a “fashion statement."

Despite the artistic and trendy appeal, grillz can present significant oral health risks if not used properly. According to the Oral Health Foundation, bacteria and food particles can easily become trapped between the metal of the grill and the teeth, leading to plaque buildup, tooth decay, and gum irritation (Oral Health Foundation, 2024). Wearing grillz for long periods of time, especially overnight or while eating, can increase this risk.

Despite the consequences of grillz, there is still a way to incorporate them into fashion while minimizing the adversities. To minimize the potential risks associated with grillz, proper hygiene and care are essential. The American Dental Association recommends removing grillz before eating, and cleaning both the grill and teeth thoroughly before wearing (ADA, 2022). Grillz should be cleaned with a toothbrush and stored in a clean case. Jewelry cleaners or harsh chemicals should be avoided from being used inside the mouth, as they can damage both the grill and the teeth (ADA).

Comfort and fitting are crucial in minimizing the damage of grillz. Grillz that are too tight, pinch the gums, or cause soreness should be removed immediately. Ill-fitting grillz can place unnecessary stress on teeth and surrounding tissues. Poorly fitted grillz can also cause enamel wear, misalignment, or gum damage. This could potentially lead to jaw discomfort or gum recession long term .

Grillz can be a great display of fashion and identity, but maintaining oral health comes first. As the Oral Health Foundation states, “A healthy smile is the best kind of shine.” (Oral Health Foundation, 2024). By minimizing grillz usage, a healthy smile is more ensured.

Nano-material engineering for improved implant osseointegration in diabetic patients

By Ria Bhutani

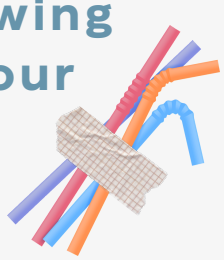
Titanium (Ti) is the gold standard for dental implant materials, but has been shown to corrode and damage the bone tissue it is embedded in over time. Several factors, ranging from surgical trauma to misfits between the implant and prosthesis, can lead to a gradual corrosion of the titanium.

This corrosion causes metallic particles and ions to be released into the bone, leading to biological or mechanical malfunctions of the implant. Zhang et. al found that patients with certain conditions such as diabetes have a higher risk of poor osseointegration due to reduced bone quality and quantity. Several nanotechnologies have been researched in recent years to promote osteointegration, how well the implant is embedded into the bone with minimal damage to both, to improve outcomes in patients with diabetes.

One of the major innovations in nano-engineering dental implants to maximize osteointegration is using TiO2 nanotubes (TNTs). These tubes are small grooves created in the implant using anodic oxidation. In a 2023 study by Zhang et. al, dental implants with nanotubes and a special chemical coating were compared to dental implants that had either nanotubes, only the chemical, or neither. The chemical they used was an engineered bioactive molecule called minTBP-1-IGF-1. It is formed by combining two molecules- IGF-1 (Insulin Growth Factor-1) and minTBP-1 (miniature Titanium Binding Peptide-1. IGF-1 releases natural proteins to promote bone growth around the implant, while mTBP-1 acts as a glue that strongly anchors the titanium implant in place. They tested these four groups of implants on rats that had Type 2 Diabetes mellitus to see which ones would yield the best bone growth.

The research team utilized double fluorescence staining to evaluate mineral apposition rate (MAR) at early stages and after 12 weeks. In both cases, the implants with both the TNT and the biomolecule had the highest MARs. Additionally, these implants had the most homogeneous and dense bone growth around them. This is a promising advance in nanoengineering that points to a generation of longer-lasting dental implants, especially for people with underlying conditions such as diabetes.

Is Your Straw Chewing Habit Damaging Your Health?



By Joe Nguyen

It's a common, often mindless habit: the nervous tap, the idle bite, the satisfying crunch of a plastic straw between your teeth. While it may seem like a harmless tic to pass the time during a meal or while finishing a drink, the long-term effects of chewing on straws can extend beyond just a mangled piece of plastic. This seemingly innocent habit can have tangible consequences for your dental, muscular, and even digestive health.

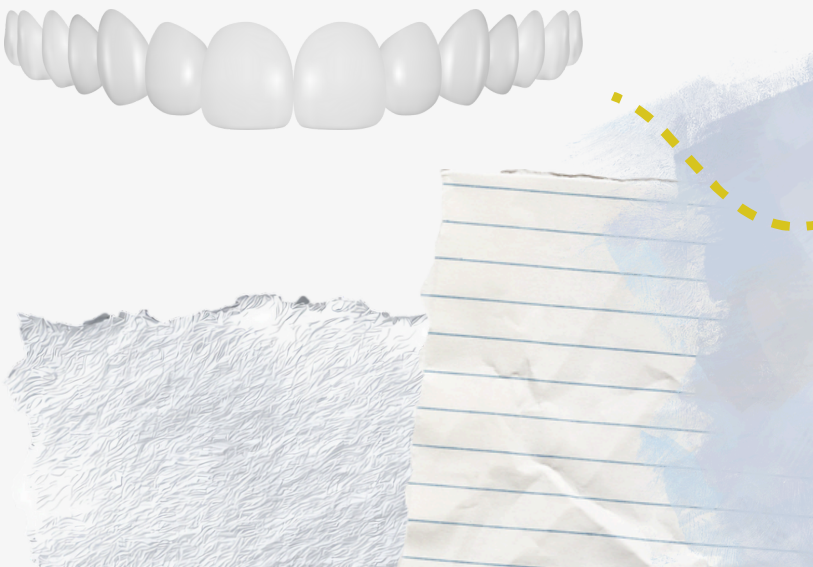
The most direct impact of straw chewing is on your teeth. Human teeth are designed to chew food, not hard objects like plastic or metal. Habitually chewing on a straw, particularly the harder, reusable kind, places undue stress on your enamel. Over time, this can lead to enamel wear, microscopic fractures, and an increased risk of chipping or cracking a tooth. Furthermore, the habit can compromise existing dental work, potentially damaging fillings, crowns, or veneers that are not built to withstand that kind of focused, repetitive pressure.

Beyond the teeth, this habit can also affect your jaw. The temporomandibular joint (TMJ), which connects your jawbone to your skull, is a complex joint that can be sensitive to strain. Constantly chewing on a straw, often on one side of the mouth, creates an imbalance in muscle use. This can lead to muscle fatigue, soreness, and potentially contribute to or exacerbate TMJ disorders. Symptoms of TMJ disorders can include jaw pain, clicking or popping sounds, difficulty chewing, and even chronic headaches or earaches.

The negative effects aren't confined to your mouth. When you drink from a straw, you inevitably swallow small amounts of air along with your beverage. For habitual users, and especially for those who chew on the straw, this can introduce excess air into the digestive tract, a condition known as aerophagia. This can lead to uncomfortable symptoms like gas, bloating, and frequent burping. While seemingly minor, it highlights how a small oral habit can have a broader physiological impact.

Ultimately, while chewing on a straw might feel like a trivial habit, its cumulative effects are worth considering. Protecting your oral health involves being mindful of not just what you eat, but also the non-nutritive habits you engage in. The next time you find yourself about to chew on a straw, consider the long-term health of your teeth and jaw, and perhaps just set it aside.

"HABITUALLY CHEWING ON A STRAW, PARTICULARLY THE HARDER, REUSABLE KIND, PLACES UNDUE STRESS ON YOUR ENAMEL."



Is Brushing Your Teeth Right After Eating Good?

By Deana Lee

Have you ever wondered when you should be brushing your teeth? The time that people brush their teeth may vary based on their personal routine and schedule. However, there is a specific time when professionals would not recommend brushing your teeth. It's right after you consume food, especially the acidic ones! Acidic foods are surprisingly more commonly found around us than we think. This may seem counterintuitive as one would think brushing their teeth after they eat takes away gunk and sustains their oral hygiene. However, this may actually wear off one's teeth.

To briefly introduce parts of a tooth and erosion, teeth are mainly separated into two parts: dentin and enamel. Dentin is the inner structure covered by enamel, and it is usually the enamel that wears off when there is tooth erosion. Though there are several stages of tooth erosion, from light erosion, affecting only the minerals in teeth, to severe erosion, where even the dentin gets affected, causing functional and visual problems to teeth (Choi et al., 2021).

Now, coming back to why acidic foods affect one's teeth, acidic food will make the mouth's pH lower than normal, and that acidic environment will cause a process called demineralization, which is the weakening and softening of the enamel. Teeth are supposed to be constantly mineralized through saliva, which consists of calcium and phosphate that strengthen our enamel, but when acidic foods get consumed, demineralization would overpower the mineralizing process. Brushing your teeth right after consuming food will cause extra wear-off of the teeth, causing irreversible damage to the enamel (Dover Family Dentistry, n.d.; Choi et al., 2012).

Several dental professionals recommend that people wait about 30 minutes to 60 minutes before brushing their teeth after a meal. Instead of brushing immediately after a meal, they also stated that rinsing one's mouth with water will help their mouth get back to a normal pH, or drinking milk after an acidic meal can give the teeth some extra calcium and casein. One should also minimize the time they expose their teeth to acidic foods or drinks because the longer acidic foods are left in the mouth, the worse erosion gets. Instead, if one is going to drink a bottle of Coca-Cola, for example, it would be better if they drink it all at once instead of sipping it throughout the day.

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