

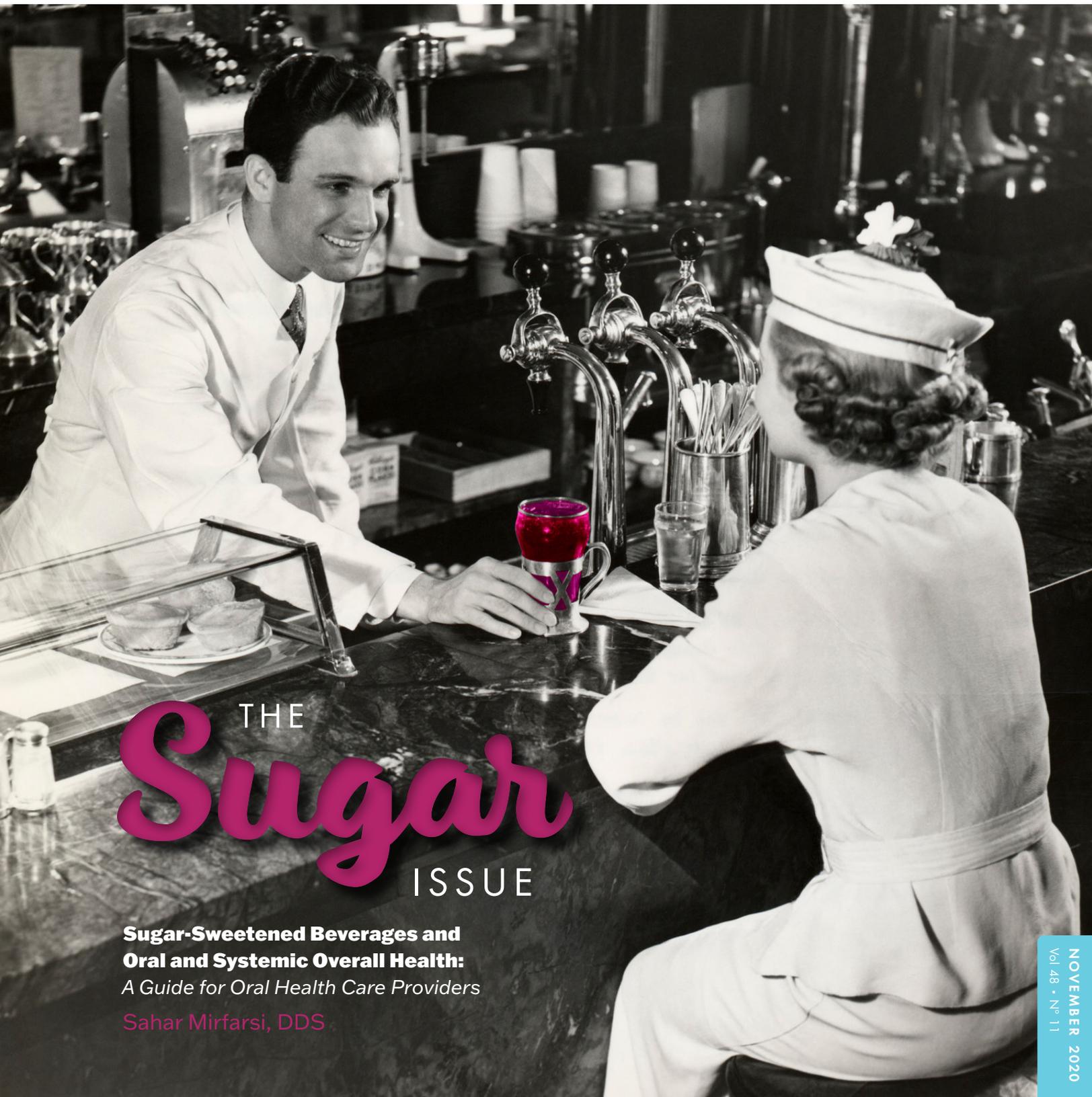
Journal

CALIFORNIA DENTAL ASSOCIATION



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Enamel Erosion
Type 2 Diabetes and Obesity
Pediatric Oral Health



THE *Sugar* ISSUE

**Sugar-Sweetened Beverages and
Oral and Systemic Overall Health:**
A Guide for Oral Health Care Providers

Sahar Mirfarsi, DDS



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published by the
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The Dis Ease of Microaggressions

Brian Shue, DDS, CDE

A person of color walks down a quiet street in a suburb. A passing car slows down to a crawl. The driver glares, shouts something unintelligible, then drives off. Was it a racial slur?

Or how about this? A person reads an article about COVID-19 in a professional journal, which begins with the words: “The Chinese Coronavirus COVID-19. . .” Was that appropriate?

Those are true stories. Unfortunately, examples like those are becoming more common in the U.S. because of heightened racial tensions. After a white police officer killed a Black man named George Floyd, our country’s beliefs and actions have been challenged. Yet some types of racism are subtle. As the impact of the coronavirus is felt by our country, there are increased incidences of anger blaming Americans of Asian descent for causing COVID-19.¹

The World Health Organization created best practices on naming new diseases to avoid stigma and any possible negative impact to any groups or areas of society. Disease names such as Swine Flu or even Legionnaires Disease would not be permitted today.

So, it is inexcusable when a news commentator or even a leader of a country refers to the COVID-19 disease as “Kung Flu.” Additionally, COVID-19 is caused by the coronavirus SARS-CoV-2, not “China virus” or “Chinese coronavirus.” That is racially insensitive. And it personally insults me.

The use of racially insensitive words is a form of “racial microaggression.” Microaggressions have been defined as commonplace verbal indignities. They



Microaggressions of a dentist can basically undermine the trust inherent in the doctor-patient relationship.

are intentional or unintentional, hostile, derogatory insults that target a person.²

Microaggressions reduce inclusion. They increase divisiveness. They reinforce bias and prejudices. They decrease empathy. And they are deceptive and insidious. Microaggressions are more than just feeling slighted. It has been shown to lead to exhaustion and decreased mental, emotional and physical well-being. Microaggression can be directed at any marginalized group, based on color, sex, religion or other characteristics. It’s not just about race. It’s about all of us.

Microaggressions are detrimental to providing health care. And they are pervasive. One study found microaggressions were seen or experienced by a majority of first-year medical and dental students. Picture this scenario: A female dentist walks into an operator. The patient declares, “You’re too young to be a doctor. I want a real doctor who knows what they’re doing. I want a doctor — who can speak English.” That is an example of an intentional microaggression.

Microaggressions can affect our dental practices. A study showed that patients who experienced microaggressions from their medical provider had poorer compliance, more missed appointments and poorer health outcomes.

In treatment planning, microaggressions of a dentist could lead to different diagnoses for two patients with identical clinical presentation. It could influence treatment plan options provided and even the type of prescriptions written. It can basically undermine the trust inherent in the doctor-patient relationship. The patient may believe the dentist did not treat them like they would have treated someone else. As a result of a perceived microaggression, the patient may even seek care elsewhere. It could lead to negative reviews in social media. One’s reputation in the community could be damaged. Untoward consequences could spring from a simple remark or action that was an unintentional microaggression. Not only is that patient gone, but their future referrals are gone as well.

Back on June 2, ADA President Chad P. Gehani, DDS, addressed racial violence. He courageously said this:

“This is the moment to unravel from whatever personal biases we may harbor. To become allies. To have the hard conversations. To listen to voices that have long gone unheard. To speak up for those who have been disenfranchised. To commit to empathy and understanding. To be forces for change. To be agents of harmony. To call out wrong when we see it. And to do what’s right when we can.”

We most likely won't see or be exposed to racial violence in our profession. But microaggressions are more likely to happen. And we can do something about it.

We must do our best to send the right messages in our practices and in our professional lives to our patients. And to our peers. It is our responsibility to treat all our patients respectfully. We must communicate with our patients without judgement or our own negative personal bias. Sue et al. states it is important to first understand one's own racial identity in our society, then look at one's opinions about other racial groups. That can lead to recognizing one's own prejudices and bias. One needs to recognize microaggressions exist, then look at how these can impact patients. And then do what is possible to correct one's own actions.²

Full disclosure: I am Chinese American. And the true stories mentioned above? Those involved

me. I was that person walking in my neighborhood. Did I confront that driver? No. And the person that read the offensive editorial? That was also me. I contacted the writer who used the racially insensitive wording. We had an open and honest discussion. The writer said there was no intention to offend and would have removed it if the writer knew it was hurtful. That is a signature characteristic of a microaggression. The organization immediately retracted the article from the publication. Writing about this subject even made me recall events that I have not thought about for decades.

Microaggressions, especially noticeable during this pandemic, can have negative effects. We need to be self-aware of our personal biases. They should not be allowed to affect our ability to provide the best dental care possible to vulnerable populations. This can greatly affect our standing in our communities and the success

of our practices. Understanding microaggressions and recognizing they exist in our everyday interactions is a first step. ■

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Focus on Oral Health

Dr. Harold Slavkin is correct in his March 2020 *Journal* article “Societal Needs and the Role of Health Care in Shaping the Future of Dentistry in the 21st Century” that health care and oral health are not the same thing. Advances in technique and skill in their application have been a huge part of declining edentulism, lower decayed, missing and filled rates in some groups, more attention to periodontal disease and better smiles. So have basic research, use of auxiliaries and other more effective means of delivery, support from industry, better basic and continuous education, regulation and, perhaps even to a limited extent, public policy. Oral health is a goal: Technique, research and the rest are means. I think Hal and I are in agreement that narrow focus to optimize one means often causes suboptimal outcomes on the goal.

One research paper¹ found that maximizing income is not the dominant objective of dentists. That is second to displaying mastery of the technical aspects of practice. A not-so-welcome finding in the same study was that oral health outcomes were regarded as very low priority. Perhaps the term “oral health” could replace “health care” in the title to Hal’s essay.

Gies did not “found the Columbia University College of Dental Medicine” nor did he argue that “dentistry should be considered a specialty of medicine.” Gies was one member from Columbia’s medical school who, in 1916, met with dentists who recommended that a dental school, separate from but affiliated with Columbia’s hospital, be established. The research base at the time was weak: “Chronic rheumatism, anemia, hardening of the arteries, digestive disorders, diseases of the heart and kidneys, nervous affections, neuralgia, etc. were the result of poor oral health.” The new school was called the New York College of Dental and Oral Surgeons.²

The 1926 Bulletin No. 19 of the Carnegie Foundation³ (known as the Gies

Report) recommended that dentistry be a separate discipline from medicine. Both medical and dental education should be grounded in science and located in research intensive universities (something that has yet to be accomplished). Gies urged that “the dental graduate should be the peer of the medical graduate in all important personal attributes, and in professional capability” (p. 237). His faith that science would strengthen dentistry has been justified. The greater challenge has been to let go of the commercialism that hinders its application. As he noted 75 years ago, “The organized dental profession in the United States has been helping to maintain these conditions [of commercialism]” (p. 236).

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Celebrating Dr. Arthur A. Dugoni’s Life of Service, Leadership and Excellence

Dr. Arthur A. Dugoni, who passed away Sept. 23 at the age of 95, transformed not only the University of the Pacific, Arthur A. Dugoni School of Dentistry, but the wider profession.

He was a charismatic and energetic educator who championed a student-centered, humanistic approach to dentistry that became a national model in dental education.

His oft-quoted mantra was, “at Pacific we grow people, and along the way they become doctors.”

Dr. Dugoni will be deeply missed, but his legacy will live on through the thousands of alumni, faculty, students, staff, supporters, professional colleagues

and personal friends who were fortunate enough to have known him.

He inspired me greatly as a mentor and role model, and I know that many who are reading this letter feel the same.

In addition to leading the Dugoni School as dean for 28 years (from 1978 to 2006), Dr. Dugoni served as president of the California Dental Association, the American Dental Association, the American Dental Education Association and the American Board of Orthodontics, to name just a few of his leadership roles.

Through the last 72 years as a member of our great profession, Dr. Arthur A. Dugoni underscored the importance of organized dentistry and its impact on our professional careers and personal lives. He remained an advocate for participation and leadership at the local, state and national level. He personally encouraged and supported the growth of countless leaders, starting ripples and then positive waves of change for orthodontics and dentistry.

Dentistry and dental education are stronger today because of Dr. Dugoni and his passion for people and the profession. Now the mantle has been passed to you and to me.

It is our responsibility to continue his legacy of excellence and commitment to leadership and service to our schools, communities and profession.

Please join me in sending our thoughts and prayers to the Dugoni family and thanking Dr. Arthur A. Dugoni for all that he has done as a true giant of our profession through his personal example and leadership.

To learn more about Dr. Arthur A. Dugoni and his life, please visit pacific.edu/about-pacific/dugoni-memorial.

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Atomic Force Microscopy Reveals Damage From Sugary Drinks



“Our findings show the serious influence of acidic drinks on enamel surface at the very beginning stage of the etching process, which is quite meaningful for people to prevent dental erosion and keep dental health.”

Researchers from the Korean Advanced Institute of Science and Technology (KAIST) used atomic force microscopy (AFM) to quantitatively evaluate how acidic and sugary drinks affect human tooth enamel at the nanoscale level. This novel approach is useful for measuring mechanical and morphological changes that occur over time during enamel erosion induced by beverages. The study was introduced in the *Journal of the Mechanical Behavior of Biomedical Materials* in June.

AFM is a very-high-resolution type of scanning probe microscopy (SPM), with demonstrated resolution on the order of fractions of a nanometer (nm) that is equal to one billionth of a meter. AFM generates images by scanning a small cantilever over the surface of a sample; this can precisely measure the structure and mechanical properties of the sample, such as surface roughness and elastic modulus.

The South Korean research team chose three commercially available popular beverages, Coca-Cola, Sprite and Minute Maid orange juice, and immersed tooth enamel in these drinks over time to analyze their impacts on human teeth and monitor the etching process on tooth enamel.

Five healthy human molars were obtained from volunteers aged 20 to 35 who visited the KAIST Clinic. After extraction, the teeth were preserved in distilled water before the experiment. The drinks were purchased and opened right before the immersion experiment, and the team utilized AFM to measure the surface topography and elastic modulus map.

The researchers observed that the surface roughness of the tooth enamel increased significantly as the immersion time increased, while the elastic modulus of the enamel surface decreased drastically. It was demonstrated that the enamel surface roughened five times more when it was immersed in beverages for 10 minutes and the elastic modulus of tooth enamel was five times lower after five minutes in the drinks.

A high surface roughness of enamel will result in a high chance of cavities due to easier bacterial adhesion on rougher surface, while a drastic deterioration of the mechanical properties of the enamel will weaken its protection property.

Additionally, the research team found preferential etching in scratched tooth enamel. Brushing your teeth too hard and toothpastes with polishing particles that are advertised to remove dental biofilms can cause scratches on the enamel surface, which can be preferential sites for etching, according to the study.

Learn more about this study in the *Journal of the Mechanical Behavior of Biomedical Materials* (2020); doi.org/10.1016/j.jmbbm.2020.103930. ■



Stopping Tooth Decay Without Killing Bacteria

Researchers from the University of Illinois at Chicago have discovered a treatment that could someday stop plaque and cavities from forming. The treatment uses a new type of cerium nanoparticle formulation that would be applied to teeth at the dentist's office. The research was presented at the American Chemical Society Fall 2020 Virtual Meeting and Expo.

Russell Pesavento, DDS, PhD, the study's principal investigator, wanted to find an alternative to the products currently used to inhibit or stop tooth decay, which can lead to both stained teeth and bacterial resistance. He wanted an alternative that wouldn't indiscriminately kill bacteria in the mouth and that would help prevent tooth decay, rather than treating caries after the fact.

Other teams had examined the effects of various types of cerium oxide nanoparticles on microbes, though only a few had looked at their effects on clinically relevant bacteria under initial biofilm formation conditions. Those that did so prepared their nanoparticles via oxidation-reduction reactions or pH-driven precipitation reactions or bought nanoparticles from commercial sources. Those prior formulations either had no effect or even promoted biofilm growth in lab tests, Dr. Pesavento said.

But he persevered because the properties and behavior of nanoparticles depend, at least partially, on how they're prepared. His team produced their nanoparticles by dissolving ceric ammonium nitrate or sulfate salts in water. When the researchers seeded polystyrene plates

Dental Teams Not at Risk for COVID-19 at Work

Public health dentists and dental assistants in Italy who treated patients while the COVID-19 pandemic ran rampant did not appear to develop the disease, according to an article published in September in *Oral Diseases*. The occupational risk of dentists and dental assistants for COVID-19 was estimated to be zero when they adhered to basic infection control standards, according to the authors.

When the pandemic peaked in Italy, non-COVID-19 health care facilities had to scale back to ensure that those working with infected patients had adequate resources. This allowed clinicians who worked at a nonhospital dental unit in Italy to investigate the occupational COVID-19 risk to dental staff.

The dental team at the Territorial Health and Social Services Authority, consisting of 11 dentists, three dental assistants and 13 nurses, implemented infection control protocols at the public health center based on guidance from the U.S. Centers for Disease Control and Prevention, the World Health Organization and the American Dental Association.

The researchers used the measures, such as wearing masks and having patients gargle with a preprocedural rinse, to determine the occupational risk of contracting symptomatic COVID-19 in a dental setting as well as the probability of treating asymptomatic, potentially contagious patients during the study period of Feb. 20 through April 30. The projections are based on the estimated numbers of asymptomatic patients, confirmed cases and fatalities in Lombardy, Italy, which was a pandemic hotspot.

During the study period, there were 256 dental encounters; 75% involved treatments that generated aerosols. Dentists and assistants treated an estimated six asymptomatic patients during the 50 days. The probability of developing COVID-19 per worked hour, per person was 0% with a confidence interval of up to 3.2%.

Learn more about this study in *Oral Diseases* (2020); doi.org/10.1111/odi.13632.



with *S. mutans* in growth media and fed the bacteria sugar in the presence of the cerium oxide nanoparticle solution, they found that the formulation reduced biofilm growth by 40% compared to plates without the nanoparticles, though they weren't able to dislodge existing biofilms. Under similar conditions, silver nitrate showed no effect on biofilm growth.

"The advantage of our treatment is that it looks to be less harmful to oral bacteria," Dr. Pesavento said. Instead, the nanoparticles merely prevented microbes from sticking to polystyrene surfaces and forming adherent biofilms.

Learn more about Dr. Pesavento's research on the UIC College of Dentistry website.

Scientists ID New Bacteria that Cause Dental Caries

Advances in research in the field of microbiomes have yielded a technique called next-generation DNA sequencing, which allows for very accurate identification of the members of the microbial community. This offers insights into microbial community composition. For several diseases, including dental caries, knowing which microbes densely populate the organ/tissue in question or become absent from it during disease can help develop effective treatments.

While *Streptococci mutans* is the most common cause of dental caries, scientists have wondered if other microbes could be responsible as well. But focus on the younger demographic has been low. Meanwhile, in Japan, the number of young adults developing dental caries is increasing.

Spurred by this increase and this insufficient literature, a team of researchers called for student volunteers for oral examinations at Okayama



University, Japan. The students answered a survey about their dental health at the beginning of the study and during a follow-up after three years. The researchers grouped the students accordingly — groups A and B — during the follow-up, then collected saliva samples of randomly selected students from these groups. The samples were analyzed via next-generation DNA sequencing to obtain microbial profiles.

Results found very similar oral microbial diversities existed in both groups. But in group A, the abundances of the bacterial families *Prevotellaceae* and *Veillonellaceae* and genera *Alloprevotella* and *Dialister* were greater than those in group B. These two families are known to comprise species that produce acid as well. This finding, therefore, suggests new prevention possibilities for dental caries that do not focus on keeping *S. mutans* populations in check.

Interestingly, both groups had low levels of *S. mutans*.

The results of the study, published in the *International Journal of Environmental Research and Public Health*, underscore the necessity of updating current knowledge on the oral microbial community and its role in the development of dental caries. But Yoko Uchida-Fukuhara, DDS, highlights limitations in the study's applicability. "All our participants were from Okayama University, so our results may not be generalizable to the wider population," she said.

Read more of this study in the *International Journal of Environmental Research and Public Health* (2020); doi.org/10.3390/ijerph17103713.

Study Measures Sustainability of Toothbrushes

A recent study of the toothbrush by the Eastman Dental Institute at University College London represents the first time a life-cycle assessment (LCA) has been used to measure environmental consequences and sustainability of a health care product. The study was published in the *British Dental Journal*.

Researchers considered different manufacturing models of the toothbrush and measured their environmental impact (carbon footprint) and human-health impact. The electric toothbrush, the standard plastic brush, the plastic brush with replaceable head and the bamboo brush were used. The team found that the electric toothbrush was comparatively harmful for planetary health.

The findings highlight the human-health burden of the toothbrush manufacturing process. The electric toothbrush causes 10 hours of disability measured in disability-adjusted life years (DALYs) mainly for people associated with the process of making and producing the devices. This is five times higher than that of a normal plastic brush.

The team found that the most environmentally sustainable toothbrush was not bamboo, as could perhaps be popularly believed, but a hypothetical continually recycled plastic toothbrush.

This simple comparative LCA showed that a plastic manual replaceable-head toothbrush and bamboo manual toothbrush perform better than traditional plastic manual and electric toothbrushes in every environmental impact outcome measure used in this study. These results could be used to inform individual consumer choice, oral health recommendations, procurement of toothbrushes for public health programs and toothbrush manufacturers.

Learn more about this study in the *British Dental Journal* (2020); doi.org/10.1038/s41415-020-1981-0.





Sugar-Sweetened Beverages and Oral and Systemic Overall Health: A Guide for Oral Health Care Providers

Sahar Mirfarsi, DDS

“The greatest medicine of all is teaching people how not to need it.”

– HIPPOCRATES

GUEST EDITOR

Sahar Mirfarsi, DDS, is an assistant professor in the division of oral medicine and co-coordinator of the Advanced Oral Diagnosis Workgroup at the Western University of Health Sciences College of Dental Medicine in Pomona, Calif. *Conflict of Interest* Disclosure: None reported.

As reported by the Centers for Disease Control and Prevention, numerous chronic diseases are preventable by choosing healthy lifestyles such as healthy eating, regular physical activity, routine health screening and eliminating tobacco use and excessive alcohol consumption. Despite all the advances in research, medicine, dentistry and nutrition, noncommunicable diseases (NCDs) are considered one of the main health challenges that health care providers face in the 21st century.¹

Diabetes, cancer, cardiovascular and chronic respiratory diseases are considered NCDs and are responsible

for significant death and social and economic burdens, particularly in low- to middle-income countries and vulnerable populations.^{1,2} Free sugars in sugar-sweetened beverages (SSBs) can lead to an increased risk of NCDs and an unhealthy diet and weight gain.³

Sugar in soft drinks and SSBs are the primary source of added sugars in Americans' diets.⁴ As many as 30% of teenaged and adult residents of California are consuming two or more SSBs daily.⁵ Over the past 30 years, there has been an increase in total daily calorie intake.⁴ Liquid calories, mainly SSBs, are responsible for 50% of this increase, and their consumption compares to milk, fruits and vegetables.⁶ Several strategies

such as taxation, disease image or calorie information labels — and limiting access to sugary drinks — have been utilized to reduce consumption of SSBs.⁷ Although oral health care providers continue to encounter individual, society and policy challenges, it is evident that they play an essential role in educating patients regarding the risk factors associated with SSB consumption and improving patients' overall health.

This issue of the *Journal of the California Dental Association* aims to encourage all oral health care providers to take an active role in screening the at-risk population and to educate patients regarding the adverse effects of SSB consumption on the oral and systemic overall health. Dental health care professionals can provide motivational interviewing, alternative recommendations and open communication with patients regarding disease prevention and lifestyle modifications.

David Lazarchik, DMD, and colleagues present their in vitro research project on the potential risk of dental erosion from alternative beverages. Alternative beverages are defined as “any nonalcoholic drink with nontraditional ingredients” that can help to increase energy and provide instant refreshment and added probiotics for gastrointestinal health. To name a few, premade coffees, teas, vitamin-enhanced waters, organic herbal and probiotic drinks are considered alternative beverages. It is reported that the consumption of alternative beverages is expected to gain even more popularity in the next five years. Creative marketing strategies for alternative beverages

have predicted its market value to reach over \$200 billion by 2024. Although there is significant research on dietary substances and dental erosion, there is very little research addressing alternative beverages and dental erosion. The literature lacks scientific data supporting the safety of alternative beverages with tooth erosion specifically. Therefore, oral health care providers are encouraged to educate colleagues and patients

In the past decade, children in the United States have been consuming nearly twice the calories from SSBs as they did 30 years ago.

regarding the potentially serious risks of the emerging alternative beverages and their overall safety.

Numerous studies have linked SSB consumption to several systemic medical comorbidities and tooth decay, which remains the most common chronic disease in American children.^{8,9} Understanding the risk factors associated with SSB consumption is crucial for oral health care providers in educating the public on disease prevention and enhancing communication with their patients and policymakers.

In the second article, my colleagues and I focus on the impact of SSBs on Type 2 diabetes (T2D) and obesity in the adult population and the crucial role of oral health care providers.

There is evidence that the reduction in consumption of SSBs can lead to a termination of the obesity epidemic and a significant reduction of risks from NCDs such as T2D.³ In this article, we have identified the at-risk population for SSB consumption, which can be utilized as a screening tool and to develop SSB reduction educational strategies. We highlight the roles of oral health care providers in preventing diseases and in the promotion of healthier nutritional and dietary choices. In the past decade, children in the United States have been consuming nearly twice the calories from SSBs as they did 30 years ago. SSB consumption during infancy may also contribute to the onset of early childhood obesity.¹⁰

In the last article, Marisa K. Watanabe, DDS, MS, and her colleagues address the significant impact of SSBs on pediatric oral and systemic overall health. The authors recommend the incorporation of motivational interviewing for behavior modification and self-management goals in oral health. They also provide a comprehensive review of the current federal, state and local policies and programs to address the reduction of SSB consumption. Their team from the College of Dental Medicine at Western University of Health Sciences in Pomona, Calif., have implemented two methods to address inappropriate weight gain in pediatric patients: 1) integration of weight, height and body mass index (BMI) into the electronic health record and 2) establishing obesity self-management goals with the patient and their guardian. Oral health care providers can initiate the discussion about obesity and weight management with the parent/

guardian by using the BMI, medical history and dietary instruction as a starting point regarding this sensitive topic. This model creates an opportunity for a positive conversation between dentists and patients.

Oral health care providers are in a unique position to counsel patients on SSB consumption and the promotion of healthy dietary plans for improved oral and systemic overall health. Further studies are essential to effectively identify methods that oral health care providers can incorporate into their preventive patient care routine. In the meantime, integrating family-based interventions, motivational interviews for behavioral modifications, open communications, counseling patient/guardian regarding healthier dietary choices and understanding the current policies are crucial to improving the existing system.¹¹⁻¹⁴ ■

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Erosion Potential of Alternative Beverages

David A. Lazarchik, DMD; Ambrose Ha, MS; and Fanglong Dong, PhD

ABSTRACT Consumption of beverages considered to be healthier alternatives to carbonated beverages and sports and energy drinks is increasing. However, little is known about the potential for these beverages to cause dental erosion. This *in vitro* study examines pH, titratable acidity and enamel weight loss as three indicators of erosion potential of eight alternative beverages and a control solution. The results show that all tested beverages demonstrated the potential to erode human dental enamel.

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The erosion potential of a wide variety of traditional beverages available to the public for many years is documented in the dental scientific literature by many *in vitro* studies. Fruit juices, colas and non-cola carbonated beverages have all been demonstrated to erode dental enamel under *in vitro* conditions,¹⁻³ as have sports and energy drinks commonly consumed by adolescent and young adults in the U.S.⁴ As large amounts of these beverages have been consumed by the general population, their contribution to increased weight gain and diabetes is well-established in the medical literature.⁵ In the U.S., two-thirds of adults and one-third of children are overweight or obese, and soft drinks that contain sugar are implicated as a major factor contributing to this health problem.⁶

As health professionals and the lay public have become aware of these issues, there has been an emerging shift in consumption away from traditional sugar-sweetened beverages (e.g., brewed and bottled coffees, teas and carbonated

beverages) toward alternative beverages. Alternative beverages have been defined as “any nonalcoholic drink with nontraditional ingredients. They promote well-being and typically have an added health benefit.”⁷ Such health benefits have been described in terms of increased energy, better hydration status and improvement in gut health via a probiotic component. Examples of alternative beverages include prepared coffees and teas, organic fruit, vegetable and herbal drinks and “functional” drinks (drinks that “provide a health benefit beyond basic nutrition”) such as vitamin-enhanced waters and probiotic drinks.^{8,9} In addition, marketers are capitalizing on increased consumer awareness of sustainability and the environmental impacts of dietary choices in order to promote alternative beverages.¹⁰ As a result of marketing forces, one recent report predicts that the functional or alternative beverage market will reach over \$200 billion dollars by 2024.¹¹ This growth is predicted despite an important need for validation of claims of safety and efficacy in promoting health.⁶

TABLE 1

Test Results for 8 Beverages and Control Sample (average of 3 samples)*

	pH	Titrateable acidity	% Weight loss
Bai Antioxidant Infusion Brasilia Blueberry	2.96 (2.96, 2.96)	13.17 (13.17, 13.17)	26.8% (25.5%, 33.7%)
Bai Antioxidant Infusion Costa Rica Clementine	2.98 (2.98, 2.98)	14.75 (14.75, 14.75)	34.5% (30%, 41%)
Deionized water (control)	6.55 (6.43, 6.57)	0.03 (0.03, 0.03)	0% (-1.1%, 8.2%)
Glaceau vitaminwater XXX acai-blueberry-pomegranate	3.01 (3.01, 3.01)	8.83 (8.83, 8.83)	34.5% (31%, 38.8%)
Glaceau vitaminwater energy tropical citrus	3.1 (3.1, 3.1)	6.7 (6.7, 6.7)	25.2% (21%, 26.3%)
KeVita Sparkling Probiotic Drink Lemon Ginger	3.63 (3.63, 3.63)	15.19 (15.19, 15.19)	16.9% (16.4%, 18.5%)
KeVita Sparkling Probiotic Mango Coconut	3.52 (3.52, 3.52)	22.89 (22.89, 22.89)	54.9% (43.5%, 59.2%)
Sparkling Ice Pink Grapefruit	2.8 (2.8, 2.8)	24.87 (24.87, 24.87)	66.3% (53.5%, 73.8%)
Sparkling Ice Strawberry Watermelon	2.95 (2.95, 2.95)	23.48 (23.48, 23.48)	31.2% (31.1%, 51.7%)

*all values were presented as median (first quartile, third quartile)

Regarding oral health, a few studies have investigated the erosion potential of such alternative beverages;^{12,13} otherwise, there is no scientific data supporting the safety of these beverages in relation to oral health in general and tooth erosion specifically. Thus, the public consuming these beverages and the dental professional have little evidence-based knowledge on which to make decisions about whether the consumption of such beverages is safe.

This study aimed to examine whether four different types of readily available alternative beverages have the potential to erode human dental enamel. This was determined by analyzing each of eight beverages and a control solution of deionized water and then measuring the pH, titrateable acidity and percent enamel weight loss after soaking sections of tooth enamel in each beverage for 28 days.

Methods

Two flavors of each of four different brands of alternative beverages were selected for testing: Bai Antioxidant Infusion Brasilia Blueberry and Bai Antioxidant Infusion Costa Rica Clementine (Bai Brands, Trenton, N.J.); Glaceau vitaminwater XXX acai-blueberry-pomegranate and Glaceau vitaminwater energy tropical citrus (Energy Brands, New York); KeVita Sparkling Probiotic Drink Lemon Ginger and KeVita Sparkling Probiotic Drink

Mango Coconut (KeVita Inc., Oxnard, Calif.); and Sparkling Ice Pink Grapefruit and Sparkling Ice Strawberry Watermelon (Talking Rain, Preston, Wash.). The test beverages were chosen based on local availability and on being classified into one of four categories of alternative drinks: antioxidant, vitamin hydration, biologic and sparkling (carbonated) water. After purchase and prior to testing, all of the beverages were stored at room temperature except the KeVita beverages, which were kept refrigerated (4 C) per label instructions due to containing live probiotic cultures. For each test of pH, titrateable acidity and enamel weight loss, three samples of test beverage from three separate unopened bottles of beverage were used, and three samples of deionized water were tested as a control beverage.

To determine pH, a pH meter (Orion Model 290A+, Thermo Fisher Scientific, Waltham, Mass.) was calibrated with buffer solutions (pH 4.0 and 7.0, Ward's Science, West Henrietta, N.Y.) and then used to perform analysis of the eight beverages and deionized water. Fifty mL from three fresh bottles of each alternative beverage and three samples of deionized water were tested at room temperature (23 C). The results for each test were recorded as an average of the three readings. The measuring probe was rinsed with deionized water and blotted dry with Kimwipes (Kimberly Clark Professional Kimtech Science,

Irving, Texas) between each recording.

Titrateable acidity of the eight beverages and control was then determined by adding 0.1 M NaOH solution mixed from NaOH crystals (Aldon Corporation, Avon, N.Y.) to 50 mL of each sample at room temperature (23 C) until a pH of 7.0 was achieved. The calibrated pH meter and a Titrette Bottletop Burette (Brandtech Scientific Inc., Essex, Conn.) were used to perform the titrations and to accurately measure the amount of NaOH solution required to neutralize the sample. Three samples of each solution from unopened bottles and three samples of deionized water were tested and the results of the three tests averaged.

For the enamel weight loss portion of the study, an Institutional Review Board exemption (Western University of Health Sciences #18/RFD/036) was obtained for the use of extracted teeth. Human molars extracted in the College of Dental Medicine clinics were gathered and disinfected using 10% sodium hypochlorite. These were cleaned of calculus and other debris by gentle scaling with a hand instrument and then lightly polished with fluoride-free pumice. The teeth were then sectioned into enamel blocks of approximately 1 mm by 2 mm by 4 mm in size using an NSK Ultimate XL lab motor system (Brasseler USA, Savannah, Ga.) with a diamond disc (Brasseler USA). Prior to testing, the

specimens were stored in 0.1% thymol solution at room temperature (23 C).

Three enamel block sections were individually soaked in fresh samples of each test beverage and in deionized water over a period of 28 days to determine the direct effect of the beverage on the erosion of teeth. Each enamel block section was rinsed with deionized water and then gently blotted dry on Kimwipes and left to air dry for about a minute before being weighed on a calibrated analytical balance (Sartorius CPA124S, Sartorius, Gottingen, Germany) for baseline measurement at the start of testing. Specimens were then immersed into 5 mL of fresh alternative beverage in a plastic graduated vial tube and stored at room temperature (23 C) until weighing at 24, 48 and 96 hours, one week, two weeks and one month after the initial immersion. The weighing intervals were patterned after a similar study by Nguyen Ngoc et al.¹⁴ At each time interval, each enamel section was rinsed and dried, as mentioned previously, before being weighed and then placed into a fresh solution from an unopened bottle of test beverage. Enamel weight loss for each beverage was calculated by subtracting weight at day 28 from weight at day 0 baseline expressed as a percentage and reporting the average of the test results for three samples:

$$\text{Percent wt loss} = \frac{\text{WtDay0} - \text{WtDay28}}{\text{WtDay0}} \times 100\%$$

Statistical Analysis

All statistical analyses were conducted using SAS software for Windows version 9.4 (SAS, Cary, N.C.). Descriptive statistics were presented as medians with the corresponding first and third quartile for continuous variables. Pearson correlation coefficient was

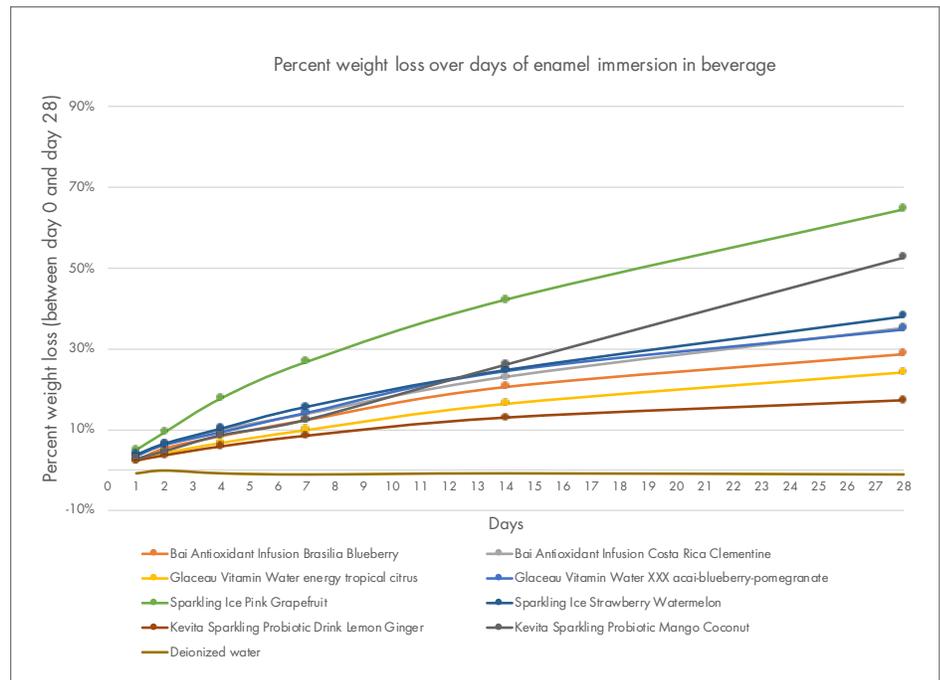


FIGURE 1. Percent weight loss over time of all tested beverages and control.

reported to measure the association between two continuous variables. The Kruskal-Wallis test was conducted to evaluate whether there was a statistically significant difference among the test groups. If the overall test was significant, the Wilcoxon rank sum test was used to explore comparison among the groups. All statistical analyses were two-sided. P-value < 0.05 was considered to be statistically significant.

Results

A total of 27 teeth were exposed to eight types of beverages plus deionized water control, with three teeth exposed to each liquid. The average of three samples for each set of tests of pH, titratable acidity and percent weight loss is summarized in TABLE 1. All of the tested beverages had a pH well below the critical pH of enamel (5.5). Half had a pH below 3.0; therefore, all theoretically have the potential to cause enamel erosion under in vitro conditions. The pH values ranged from a high of 3.63 for KeVita Lemon Ginger to a low of 2.80 for Sparkling Ice Pink Grapefruit. The

pH of deionized water was 6.52, lower than a neutral 7.00 that one might expect, likely due to natural absorption of atmospheric carbon dioxide and formation of a small amount of carbonic acid, thus lowering the pH slightly below neutral.¹⁵ Titratable acidity of the eight tested beverages varied over a wide range, from a low of 6.70 mL of 0.1 M NaOH for Glaceau vitaminwater energy tropical citrus to a high of 24.87 mL for Sparkling Ice Pink Grapefruit. Percent weight loss measured at four weeks from baseline also varied widely from a low of 16.9% loss of initial baseline weight for KeVita Lemon Ginger to a high of 66.3% loss of weight for Sparkling Ice Pink Grapefruit.

All other eight beverages had a statistically significant higher percentage of weight loss than deionized water (all p-values < 0.05, results not shown). FIGURE 1 represents the percentage of weight loss compared to day 0 against time elapsed. Moreover, there was a statistically significant association between weight loss percent and titratable acidity ($r = 0.6792$, p-value = 0.0003,

FIGURE 2). However, the association between weight loss percent and pH value was not statistically significant ($r = -0.3186$, $p\text{-value} = 0.1291$, **FIGURE 3**).

Discussion

The critical pH of enamel (5.5) is the pH at which enamel dissolves and forms a saturated solution of calcium, phosphate and hydroxyl ions.¹⁶ All of the beverages tested in this study had a pH well below the critical pH of enamel, and thus as a simple in vitro chemical reaction, all have the potential to cause erosion. Reddy et al. argued that pH at the time of beverage exposure is the most important factor of a solution to consider in causing dental erosion because it directly measures the concentration of hydrogen ions available at the tooth surface to initially soften enamel.¹⁷ They proposed a classification of erosion severity based on the theoretical solubility of hydroxyapatite as a function of pH. According to their system of classification, half of the beverages tested in this study would fall into a category of moderately (pH 3.0 to 4.0) erosive and half would be classified as severely erosive (pH below 3.0). As a point of reference, many colas and non-cola carbonated drinks that have been shown to be erosive have similar pH values. Other authors, however, argue that titratable acidity is a better indicator of erosion potential because it measures not the concentration of hydrogen ions but total numbers of ions available for interaction with enamel and accounts for the time that salivary pH is lowered after beverage consumption.^{4,18} The results of our study are more in line with this rationale because pH did not correlate with enamel weight loss, whereas titratable acidity did.

All of the beverages in this study caused some level of erosion as measured by enamel percent weight loss over a one-month period of immersion. Even

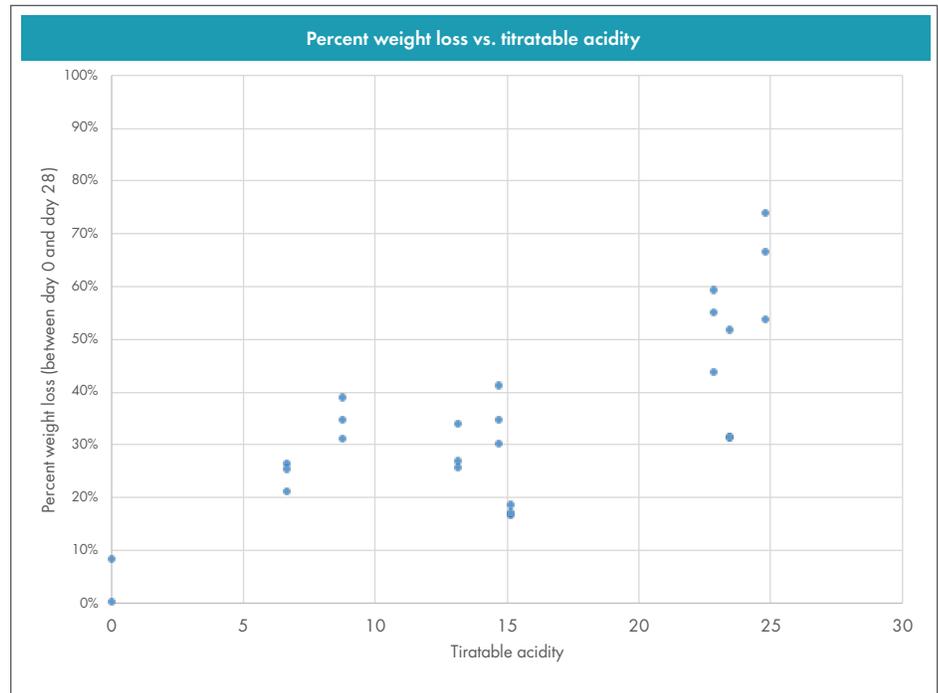


FIGURE 2. Scatter plot showing statistically significant association between weight loss percent and titratable acidity.

the least erosive (KeVita Lemon Ginger) demonstrated 17% weight loss. Glaceau vitaminwater XXX acai-blueberry-pomegranate, Bai Costa Rica Clementine and Sparkling Ice Strawberry Watermelon were midrange (35% to 38%) in the spectrum of enamel weight loss and their weight loss versus time curves were almost identical. Sparkling Ice Pink Grapefruit and KeVita Mango Coconut demonstrated the highest amount of weight loss, with 65% of enamel dissolved after 28 days in the Ice Pink Grapefruit beverage. Of note, Ice Pink Grapefruit has carbonated water, citric acid and grapefruit juice concentrate listed as the first three ingredients on the product label. According to FDA guidelines, ingredients are listed in order of predominance.¹⁹

It is tempting to speculate that the beverage's high level of erosion is related to this combination of ingredients because both citric acid and citrus fruit juice have been shown to be significant eroders of enamel.²⁰ Indeed, a review of our test sample ingredient labels shows that all of them contain at least one and some more than three potentially

erosive organic acids, such as ascorbic, acetic (vinegar), citric, lactic and malic acids and/or fruit juice concentrates. However, the multitude of ingredients (the Glaceau vitaminwater beverages list over 20 ingredients on the label), the great variation in combinations of these ingredients and the fact that they are present in unknown concentrations and quantities make it impossible to determine their relationship to erosion potential without more sophisticated chemical tests than were available for this study. Each beverage is a unique chemistry experiment related to effects on oral hard tissues. The citrus-flavored beverages chosen for this study did not show a pattern of lower pH, higher titratable acidity or greater enamel weight loss.

Our study is significant because it supports the idea that increasing consumption of nontraditional beverages that the public seeks as healthy alternatives to traditional drinks may mean increased potential for erosion in the population at large. Although research in the area of dental erosion awareness is sparse, it appears that the

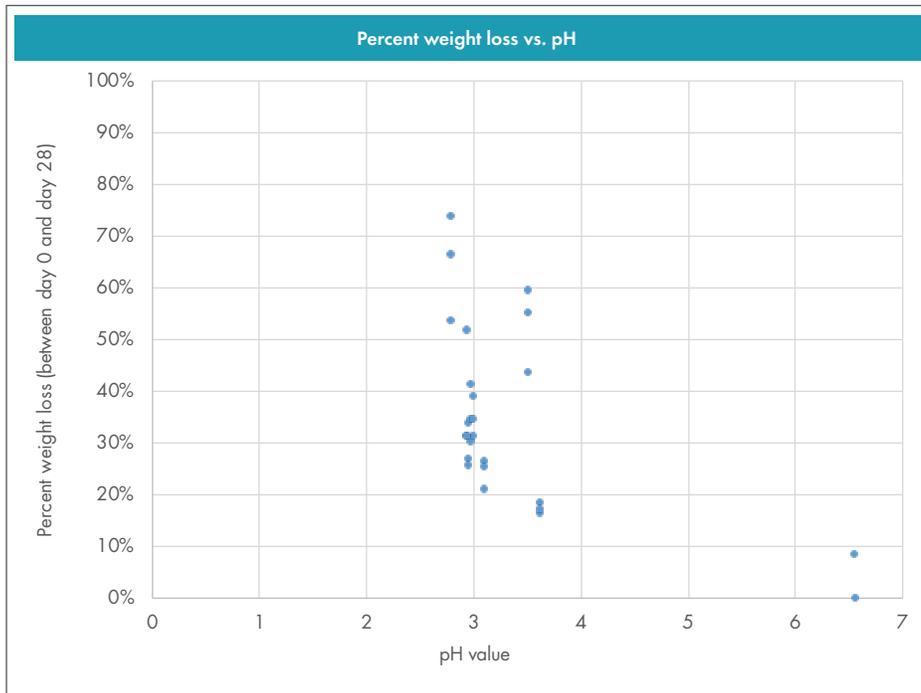


FIGURE 3. Scatter plot showing lack of association between weight loss percent and pH.

public²¹ and possibly even the dental profession is not sufficiently aware of the significance of certain foods and beverages in relation to erosion. In a survey of U.S. practicing dentists, only 30.5% correctly identified all signs of dental erosion even though 86% reported feeling competent in diagnosis and patient education about erosion.²² This low level of erosion awareness may extend to dental educators. A recent survey-type study of U.S. and Canadian dental schools with a 77% response rate showed that all respondents included dental erosion as a topic in their dental school curriculum, but the time dedicated to teaching the dental erosion curriculum was less than one hour per year. Only 45% taught some form of examination based on an erosion index. Alarming, only 15% of respondents (dentist faculty or administrators and presumed curriculum experts) could correctly identify all clinical signs of dental erosion. As the author of this study aptly stated, lack of education leads to “erroneous diagnosis and improper preventive and restorative management.”²³

Because the process of dental erosion caused by dietary substances is such a complex one, several limitations of the present study were inherent in its design. Obtaining precisely standardized sizes of enamel block sections was challenging because of manually sectioning enamel from different surfaces of different teeth. Although samples were of approximately the same size, some variation was present, which may have affected the surface area available for exposure to the beverage and may have influenced rates of erosion in the weight loss tests. Because ours was an in vitro study, it does not account for the influence of the method of beverage ingestion on the erosion process. Several studies have demonstrated the effects of drinking methods (glass, bottle, straw), the timing of ingestion (at meals or between meals), food temperature (iced, room temperature, hot) and liquid flow rate (sipping, gulping) on erosion, which are factors not accounted for by our study.²⁴⁻²⁷ This study also does not take into account the complex aspects of the protective factors of saliva biochemistry. Factors such as salivary flow rate, pH,

buffer capacity and quantity and quality of the protective salivary pellicle can vary significantly from patient to patient and thus affect an individual’s response to potentially erosive dietary substances.^{28,29} Ultimately, in a clinical setting, the process of erosion is governed by these many factors in addition to both the quantity and time over which an erosive beverage is consumed. Using a time calculation method from a previous study by von Fraunhofer and Rogers³ that calculated total duration of exposure to carbonated beverages, and substituting alternative beverages for carbonated ones, the 28-day exposure in the weight loss portion of our study would result in a total beverage exposure of almost 27 years. Considering that these beverages are heavily marketed to young adults, this time period might realistically reflect the level of potential exposure to erosion seen in a middle-aged and older adult in the future.

Although this study contributes to a very large body of literature on dental erosion, it also suggests topics for future research. Other than a few previously cited studies that examined the relationship between erosion and sparkling waters, we could find no other literature related to alternative beverages. As new versions of these beverages are rapidly developed and marketed for consumption, it is important that further research examines their role in contributing to the many acid challenges of the modern diet to dental hard tissues. Additionally, research on ingredients that could be added to beverages or used as topical agents to reduce the potential for erosion could contribute to decreasing an increasingly prevalent cause of tooth tissue loss. Many such substances such as casein, milk containing fluoride and food polymers (propylene glycol alginate and gum arabic) have

been shown under research conditions to decrease erosion potential.^{30–32}

Whether beverage companies would be willing to adopt methods to make their products safer to oral tissues will be dependent on developing a robust body of evidence to support such measures, along with educating the public and dental profession about the dangers of excessive consumption of erosion-inducing dietary substances. We acknowledge that well-controlled in vivo studies are necessary to demonstrate the relationship between acidic beverages and dental erosion conclusively.

Conclusions

This study suggests that in in vitro conditions, alternative beverages have a significant potential to cause tooth enamel erosion. As found in many other studies, the titratable acidity of a beverage was statistically correlated to the weight loss percent of enamel samples soaked in the beverage. As the consumption of these beverages increased, oral health care providers should be vigilant for signs of erosion in their patients and obtain a detailed history and examination. In cases where such beverages, other foods or drinks are implicated as a cause of erosion, patient education and dietary counseling are essential. Additionally, implementing preventive measures such as topical fluoride is paramount to reducing the effects of a lifetime consumption of erosive foods and beverages. ■

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2. If I decide to assist the Buyer with financing, how can I be guaranteed payment of the balance of the sales price?
3. Can I sell my practice and continue to work on a part time basis?
4. How can I most successfully transfer my patients to the new dentist?
5. What if I have some reservation about a prospective Buyer of my practice?
6. How can I be certain my Broker will demonstrate absolute discretion in handling the transaction in all aspects, including dealing with personnel and patients?
7. What are the tax and legal ramifications when a dental practice is sold?



QUESTIONS MOST OFTEN ASKED BY BUYERS:

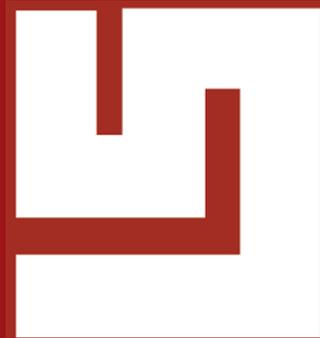
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2. Can I afford not to buy a dental practice?
3. What are ALL of the benefits of owning a practice?
4. What kinds of assets will help me qualify for financing the purchase of a practice?
5. Is it possible to purchase a practice without a personal cash investment?
6. What kinds of things should a Buyer consider when evaluating a practice?
7. What are the tax consequences for the Buyer when purchasing a practice?



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The Impact of Sugar-Sweetened Beverages on Type 2 Diabetes and Obesity and the Role of Oral Health Care Providers

Sahar Mirfarsi, DDS; Ye Lin, MS; Shaahin Dadjoo, BS; Ho-Hyun (Brian) Sun, DMD, MS; and Jeffrey A. Elo, DDS, MS

ABSTRACT Sugar-sweetened beverage (SSB) consumption accounts for one-third of American's sugar intake and diet. In this article, we discuss the negative effects of SSB consumption concerning adult oral and systemic overall health. The purpose of this discussion is to highlight the important role of oral health care providers in educating patients regarding sugar intake when selecting SSBs and the health risks associated with SSB consumption.

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Disclosure: None reported.

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Conflict of Interest
Disclosure: None reported.

In 2017, the Centers for Disease Control and Prevention (CDC) reported that sugary drinks were the leading sources of added sugar in the U.S.,^{1,2} accounting for 34.4% of the American sugar intake.³⁻⁶ The National Health and Nutrition Examination Survey (NHANES) from 2011–2014 also reported that about one-half of U.S. adults (49.3%) consume at least one sugar-sweetened beverage (SSB) on any given day.⁵⁻⁹ Overall, the daily caloric intake of the average American has increased by 300 calories since 1985,¹⁰ and as many as 30% of teenage and adult residents of California are consuming two or more SSBs daily.¹⁰ Most SSBs are consumed outside of homes, often at various stores and fast-food restaurants.⁸

SSBs are defined as beverages that undergo the artificial addition of any one or more sugar compounds during production.¹¹ Sugars in fresh vegetables and whole fruits are known as “intrinsic sugars” and are not considered “added” or “free” sugars.¹² SSBs are also known as “calorically sweetened beverages” and can include nondiet soda, altered or processed fruit juices, sports or energy drinks, sweetened water, coffees and tea beverages.¹¹ These added sugars vary from brown or raw sugar to corn sweetener, high-fructose corn syrup, dextrose, fructose, glucose, lactose, honey, lactose, malt syrup and sucrose.^{1,11}

Studies have linked SSB consumption to various systemic medical comorbidities (TABLE 1)² as well as tooth decay, which remains the most common chronic disease in American children.^{2,10,13–21} SSB consumption has been shown to increase the risk of developing metabolic syndrome.² Metabolic syndrome is defined as a collection of factors, such as elevated blood pressure, fasting blood glucose, dyslipidemia and abdominal/central obesity, that will elevate the risk of developing Type 2 diabetes (T2D) as well as cardiovascular disease.²² SSBs contain abundant “added sugars” that contribute to weight gain, reduced satiety and likely incomplete compensation for total energy, which will lead to increased energy intake.^{23,24} SSBs promote weight gain partly because of incomplete compensation for liquid calories at subsequent meals.²³

Sugars themselves are known contributors to chronic diseases of the heart and metabolism, often subsequent to carbohydrate-associated body mass index (BMI) elevation.^{6,21,25,26} Conversely, reducing added sugar and SSBs has been proven critical in maintaining a healthy weight.^{1,3,27} SSBs provide fermentable sugar sources and are associated with

TABLE 1

Systemic Diseases Linked to Sugar-Sweetened Beverage Consumption

Type 2 diabetes
Obesity
Cardiovascular disease
Hyperuricemia/chronic kidney disease
Nonalcoholic fatty liver disease
Metabolic syndrome
Gout
Asthma

unfavorable bacterial growth in the oral cavity²⁸ that contributes to periodontal disease, dental caries and tooth loss.^{4,6,13} Reducing a high-carbohydrate diet can also positively influence patients’ oral health, such as gingival, periodontal health, tooth decay and tooth loss, and that is due to the reduction of food sources for the oral bacteria.^{6,9,29}

The purpose of this review is to evaluate the interplay between SSBs and two systemic diseases, T2D and obesity, with a focus on the role of oral health care providers in the prevention, promotion of healthier nutritional and dietary choices (TABLE 2)^{1,4,28} and education against this rising public health threat.

Demographics of SSB Consumption

SSB consumption has been found to follow distinct socioeconomic trends. Lundeen and colleagues analyzed the 2016 data from the Behavioral Risk Factor Surveillance System (BRFSS) consisting of a state random-digit-dial telephone survey of adults from Delaware, Indiana, Iowa, Mississippi, New Jersey, New York, Ohio, Texas and West Virginia.^{5,7}

Their results demonstrated that men had higher SSB consumption by one or more times per day than their women counterpart.⁷ SSB intake was also the highest in individuals aged 18 to 24 years; of Hispanic and non-Hispanic Black ethnicities; with some high school education; who are unemployed; who smoke regularly; who are obese; residing in nonmetropolitan counties;

and with no physical activity in the past month.⁷ Within the nine states, approximately 1 in 3 adults drink SSBs one or more times per day.⁷ NHANES data from 1988–2004 and 1999–2004 also indicate higher SSB consumption in males³⁰ as well as similar variations according to geographic and behavioral differences^{1,7,31} such as lack of enough sleep, exercise and fruit consumption.^{31,32}

The literature also appears to correlate well with previous data indicating poorer dietary patterns in lower-income individuals compared to their higher-income counterparts.⁸ The 2015–2020 Dietary Guidelines for Americans recommend daily consumption of added sugars not to exceed 10% of total calories.^{5,9,11} Some investigations show that an additional 5% of total caloric reduction from free sugars may provide notable health benefits.¹¹ In fact, there is evidence that reduction of SSB consumption can lead to a termination of the obesity epidemic and a significant reduction of risks from noncommunicable diseases such as T2D.¹²

Overall, SSB consumption is higher among males, young adults, non-Hispanic Blacks, Hispanic-Americans, low-education and low-income adults.^{7,8,9,33} Smokers and individuals with a poor diet are also at risk of higher SSB consumption.^{1,31} As an integral member of the patient’s health care team, oral health care practitioners should remain cognizant of SSBs’ oral and systemic complications and maintain effective communication with at-risk patients, (TABLE 3)^{2,14,15} as SSB consumption

TABLE 2

Providing Sugar-Sweetened Beverage Consumption Alternatives to Patients^{1,4,13}

Try to avoid or minimize the consumption of added sugars/caloric sweeteners.
Promote drinking regular or sparkling water or low-calorie beverages instead of sugary drinks.
Try to minimize purchasing or storing SSBs in your fridge at home.
Providers to promote adding cucumber slices or lemon/lime to drinking water to enhance the taste of water.
Add a splash of 100% fruit juice (without “added-sugars”) to plain sparkling water for a refreshing and low-calorie drink. (Note: Citrus-flavored water can increase the risk of enamel destruction because of its higher acid levels.)
When choosing SSBs, try to consume a smaller-size bottle or wait until mealtime.
Be a role model for your friends and family by choosing healthy, low-calorie beverages.
Only consume SSBs with meals within a 15-minute time frame, use a straw when consuming SSBs and reduce consumption to 12 or fewer ounces per day.

TABLE 3

Monitoring Tools To Screen for At-Risk Patients⁶

Screen for high-risk individuals: male, young adults, Hispanics, non-Hispanic Blacks, low-income, unemployed, smokers, obese, low-level of education, lack of physical activity.
How often have you had sugary drinks or soda in the past 30 days? (Diet drinks are excluded.)
During the past 30 days, how often did you drink sweetened fruit drinks, including ones you made at home and added sugar to?

remains especially high in Black, Mexican American and non-Mexican Hispanic children, adolescents and young adults across the U.S.^{11,34,35}

SSB Consumption and T2D

Diabetes mellitus (DM) denotes a common group of carbohydrate metabolic disorders characterized by chronic hyperglycemia.^{36,37}

Hyperglycemia is an abnormal blood glucose elevation due to lack of insulin production or tissue insensitivity to insulin.³⁶ DM is categorized into several types, including Type 1 (T1D), T2D, gestational, genetic, infectious and those caused by pancreatic injury.³⁶ Diabetes is a multifactorial systemic condition that can adversely affect a patient’s oral and overall systemic health.^{36,38}

According to the 2017 National Diabetes Statistics Report, 9.4% of the U.S. population had diagnosed or undiagnosed diabetes in 2015.¹⁰ This number amounts to 30.3 million diagnosed people from various age

groups, with 23.1 million adults (or 7.2% of the U.S. population) and 1.5 million newly diagnosed adult-onset cases each year.¹⁰ In 2017, the American Diabetes Association calculated the economic costs of diagnosed diabetes in the U.S. to be approximately \$327 billion, with an average cost of \$9,600 to the individual per year.³⁹

The etiology of T1D is considered to be immune-mediated destruction of insulin-producing pancreatic beta (β) cells.⁴⁰ T2D is often referred to as adult-onset diabetes and is characterized by abnormal elevation of blood glucose levels owing largely to tissue insensitivity to insulin.^{36,41}

Clinical complications of uncontrolled diabetes include cardiovascular disease, heart disease, stroke, kidney disease, blindness, amputations, mortality and risks of developing certain cancers later in life.^{23,42,43} The population with T2D continues to increase worldwide with estimates projecting that number will

add up to 592 million people by the year 2035.⁴⁴ This increase remains notably coincident with the increasing number of SSB consumption.^{26,45,46} These cardiometabolic trends are seen internationally in China, Thailand and Japan as well.⁴⁷⁻⁵⁰

SSBs play an independent, negative role in the development of diabetes and obesity.^{11,23,24} In low-risk, healthy populations, SSB intake introduces a low-risk potential for the complications of T2D, whereas in at-risk populations, SSB intake introduces a moderate to severe risk of the same.^{49,51} For example, diabetic patients show elevated sensitivity to dietary sugar and more frequently suffer from periodontitis and oral candidiasis.^{6,38} A direct association between SSB consumption and a specific disease is not always clear; however, it appears that the risk of developing systemic disorders increases based on whether at baseline one is at-risk for developing one of these multifactorial diseases.^{29,52-55} Studies have shown that a body weight beyond “overweight” is a risk factor for T2D as well as cardiovascular disease, cancer and even death.^{2,4} Therefore, SSBs at least indirectly contribute to T2D because of their capability to prompt weight gain.²

SSBs also contain rapidly absorbed carbohydrates such as high-fructose corn syrup,² which can significantly and quickly increase blood glucose and insulin concentration.² This mechanism produces high dietary glucose, which, in return, stimulates appetite, assists in weight gain and promotes glucose intolerance as well as insulin resistance.² The risk of developing T2D from the consumption of SSBs is independent of obesity.² SSBs may also provide increased

dietary glycemic load associated with inflammation, insulin resistance and impaired β -cell function.^{2,23}

In particular, fructose and leptin seem to play significant roles. Fructose is a monomer sugar with a distinct metabolic profile.⁵¹ Leptin is a hormone whose concentration is a crucial signal to suppress food intake and increase energy expenditure.⁵¹ Leptin functions intrinsically in the process of weight regulation by inhibiting food intake and increasing the body's energy expenditure.⁵¹ Many SSBs are sweetened with a combination of both glucose and fructose; however, fructose, unlike glucose, neither stimulates insulin secretion nor enhances leptin production.⁵¹ This results in a reduced leptin concentration, which fails to inhibit food intake and increase energy expenditure. Fructose is also associated with the creation of an unfavorable lipid profile. Fructose is metabolized by the liver where it charges increased de novo hepatic lipogenesis, which promotes an adverse lipid profile, a well-established predictor of cardiometabolic conditions.⁵⁶ Individuals who consume high amounts of fructose also tend to have an increased food intake response, compounding the risk of obesity. Therefore, insulin resistance and adverse hepatic and cardiometabolic biochemical markers are eminent.⁵⁶

SSB consumption could contribute to abdominal/central obesity in diabetic patients, and its intake should be minimized in diabetic patients.⁵⁷ Excessive adiposity enhances insulin resistance, which is one of the hallmarks of T2D.⁴⁵ In 2019, a 30-year followed study reported a positive association between SSB consumption and T2D.⁵⁸ Other studies measured the oral glucose tolerance as this can accurately reflect the human physiologic response to sugar

intake and the resulting insulin secretory response of pancreatic β cells.⁵⁰ The Mihama diabetes prevention study determined that those with a baseline impaired glucose tolerance have an increased risk of T2D according to SSB intake.⁵¹ Considering that T2D is a multifactorial disease that spans genetic, epigenetic and environmental aspects, this should come as no surprise.

Studies support that SSBs increase the risk of T2D development in at-risk populations. For instance, the Hispanic population is the largest and fastest-

Individuals who consume high amounts of fructose also tend to have an increased food intake response, compounding the risk of obesity.

growing U.S. ethnic group, with a risk twice that of non-Latino white individuals of developing T2D.⁴² A study surveying low-income Latinos with uncontrolled T2D determined that, on average, nearly 10% of their daily total caloric intake was from SSBs alone, commonly including fruit drinks and citrus juices.⁴² In similar studies, the highest quartile of SSB consumers (one to two SSBs per day) was reported in African Americans, Mexican Americans, lower-education and lower-income populations at the highest risk of developing obesity.^{23,59} Cultural or social factors play a role in SSB consumption;⁸ hence, oral health care providers have the opportunity to educate the public about the latest research findings. Reduction of SSB

consumption will decrease the risk of T2D and cardiovascular disease by improving insulin sensitivity, blood pressure reduction and inflammation.²

SSB Consumption and Obesity

Obesity has become a worldwide epidemic that contributes significantly to numerous chronic diseases and mortality.^{12,60-62} According to the World Health Organization (WHO), obesity is defined as an unusual or excessive body fat buildup with adverse health implications.⁴⁶ Approximately 40% of adults in the U.S. are obese,⁶³ and all aspects of the health care system will likely encounter an increased number of individuals requiring special considerations for obesity-related health conditions.⁸ Strong evidence exists that childhood obesity increases the risk of obesity in adulthood, which can lead to serious health issues such as the development of T2D and cardiovascular disease.² Greater SSB consumption is one of the contributing factors of obesity in children.⁴

An overweight body mass index (BMI) measures between 25 kg/m² to 30 kg/m² while the obese BMI increases beyond 30 kg/m².⁴⁶ Both conditions are preventable through lifestyle changes.⁶⁴ Dietary alteration is one of the most crucial lifestyle changes that can reduce caloric intake for obese patients.⁶⁴ According to National Center for Health Statistics data, half of the population consumes SSBs in the U.S. and a quarter of these people intake more than 200 kcal from those beverages.⁸ Health care providers, including dentists, can guide patients, set motivational goals to limit or replace SSB consumption and help make healthier dietary choices in overweight and obese patients.⁵⁹

In the past decade, children in the U.S. have been consuming nearly twice the calories from SSBs as they did 30 years ago. This has been linked to the growing national health crisis of childhood obesity.^{23,65} The percentage of obese and overweight adults in the U.S. increased from 15% and 47% in the late 1970s to 36% and 69% in the last decade.⁴⁵ Over the last four decades, there has been a global increase in consumption of SSBs,^{66,67} and the sugar content in SSBs is in large part responsible for the increased prevalence of obesity and chronic weight-related disorders.⁶⁶⁻⁶⁹

Increased consumption of SSBs and sugar-sweetened acidic (SSA) beverages (sugary soda, acidic non-100% fruit juice, sugary sports beverages) is associated with obesity.^{2,27,64,66,70} Studies have shown that the acidic nature of SSAs can increase tooth wear.^{2,27,64,66,70,71} There is sufficient evidence connecting obesity with gastroesophageal reflux disease (GERD) symptoms, which can also cause erosion of the teeth and tooth wear.⁶⁶ The rates of SSB consumption and obesity also vary by sociodemographic characteristics such as age, sex, race/ethnicity, geography and socioeconomic status.^{34,72} The 2016 BRFSS survey suggested that SSB consumption is higher among individuals aged 18 to 24 years (43.4%) as compared to other age groups.⁷

Remarkably, SSB consumption during infancy may also contribute to the onset of early childhood obesity.⁷³ A nationwide longitudinal study in collaboration with the Food and Drug Administration and the Centers for Disease Control and Prevention (CDC) showed that children who consumed SSBs during infancy (before the age of 6 years) are more likely

to develop obesity than non-SSB consumers (17.0% versus 8.6%).⁶⁴ Data from Australia suggested that SSB consumption is associated with male individuals and less healthy behaviors as well as a high prevalence of obesity.⁷⁴ Overseas, data from the 2014 national intervention in China correlated that boys are more likely to consume SSBs and are more likely to develop obesity.⁷⁵ Health care providers should take part in raising awareness regarding the contributing factors of obesity.

Overseas, data from the 2014 national intervention in China correlated that boys are more likely to consume SSBs and are more likely to develop obesity.

Replacement of SSBs by low-fat/fat-free dairy products is associated with a decreased BMI z-score.⁷⁶ Reduction in weight gain and adiposity in children has been linked to the reduction of SSB consumption.² Sugary liquid and calories have been considered to be a public health issue in terms of obesity due to their affects, which are less pleasing than solid food.⁷⁷ As the trend of SSB popularity parallels the increase in obesity over the past 40 years,⁶⁶ prevention of obesity is crucial in the overall health of our patients. Oral health care providers play an important role in promoting reduction and replacement of SSB consumption knowing that choosing a healthier dietary plan will help reduce the incidence of obesity and its related disorders.^{45,66,71,78}

Conclusion

SSB consumption has had a significant increase in recent decades in the U.S.² Oral health care providers should screen for at-risk individuals and provide counseling not only regarding the healthier dietary options⁵ but also about the adverse effects of SSBs on patients' overall oral and systemic health.^{6,28}

In terms of prevention, it is essential to continue educating patients regarding limiting or substituting SSB consumption² as well as reminding them about the high dietary glucose with little nutritional value in SSBs,² so they can make healthier choices such as regular fluoridated water consumption.³¹ ■

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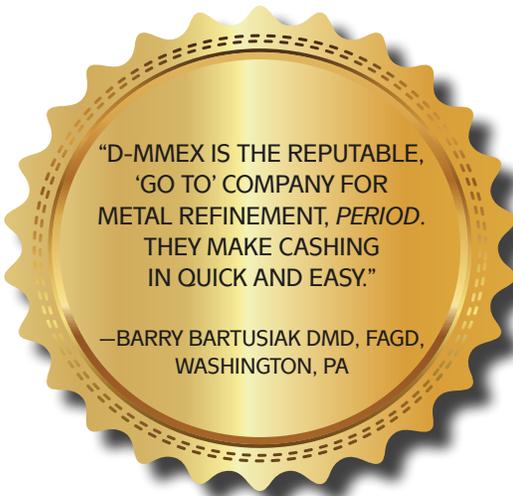


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Addressing Sugar-Sweetened Beverages and Their Impact on Pediatric Oral and Systemic Health

Marisa K. Watanabe, DDS, MS; Eric S. Wong, BS; Krystle P. Rapisura, DMD, MS; and T. Jamie Parado, DDS

ABSTRACT This article explores sugar-sweetened beverage (SSB) consumption among the pediatric population and its effects on both oral and systemic health. Due to the significant correlation between SSBs and obesity, Type 2 diabetes and tooth decay, the authors suggest alternative interventions beyond the traditional dental management model. Recommendations such as integration of motivational interviewing for behavior modification and self-management goals in oral health as well as federal, state and local policies and programs are discussed.

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Conflict of Interest
Disclosure: None reported.

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Conflict of Interest
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Conflict of Interest
Disclosure: None reported.

The World Health Organization (WHO) defines the social determinants of health as the “conditions in which people are born, grow, live, work [learn, play, worship]¹ and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities — the unfair and avoidable differences in health status within and between countries.”² But beyond the definition, the circumstances impacting population health are determined by economic, social and development policies, along with the ongoing changes in social norms and political systems.³ These such systems have influenced the

shift in mindset and policy to address sugar-sweetened beverages (SSBs), particularly in the pediatric population.

From 2011 to 2014, 63% of youths aged 2 to 19 years consumed at least one SSB daily in the U.S.⁴ This translates to an estimated 143 kcal consumed daily by U.S. youths, comprising about 7.3% of their daily total calories.⁵ Calories consumed from SSBs on a given day increased with the child's age, and low income and racial minority groups were more likely to consume SSBs.^{4,5} According to the 2015–2020 Dietary Guidelines for Americans, SSBs are defined as liquids that are sweetened with some form of sugar, including soda, fruit drinks, sports drinks, energy drinks, sweetened waters and coffee and tea beverages with added sugars.⁶ Although daily consumption of SSBs declined from 80% in 2003 to 63% in 2014, consumption of SSBs of the pediatric population (ages 0–20) remains a concern due to the effects on oral and overall health.⁵

Introduction

In a review of the current literature regarding SSBs, a growing number of studies have shown a strong positive correlation between SSBs and dental caries in pediatric patients.⁵ A 2019 longitudinal study of low-income, African American children found that consistent soda intake during early childhood (ages 0–5) resulted in one additional carious tooth surface.⁷ Another longitudinal study found that low-income African American children with high consumption of soft drinks compared to milk and 100% fruit juice were at high risk of developing caries.⁸ Multiple studies report a strong positive correlation between SSBs and dental caries, with one reporting that third-graders had an increased risk of 22% of developing caries for every additional serving of SSB consumed per day.^{9–13}

Furthermore, consumption of SSBs in the pediatric population has been positively correlated with an increased risk of obesity and Type 2 diabetes mellitus.⁵ In a 2017 meta-analysis of 17 prospective cohort studies in children, 94% of the studies showed a positive correlation between SSBs and body weight measures such as body mass index (BMI), BMI z-score, body weight, body fat, waist circumference, weight-for-height z-score and waist-to-hip ratio.¹⁴ Studies have also shown that a decrease in SSB consumption or replacement of

By establishing a dental home at the appropriate interval, nutritional education can begin at a very early age, thus helping to pave a way for a healthier lifestyle.

SSBs with alternatives leads to better body weight measures.^{5,14–19} One study found that higher intake of SSBs resulted in a 55% increased chance of children being obese or overweight compared to lower intake.²⁰ While modest, SSBs have also been positively correlated with an increase in insulin resistance, with one study showing a 5% increase in HOMA-IR (a marker of insulin resistance) for every SSB consumed among 12- to 19-year-olds.^{5,21} For children, these predisposing factors increase the risk of developing fatty liver disease and cardiovascular risk factors, as both have also been positively linked to SSB consumption.⁵

This article reviews current literature that addresses the influence of SSBs on the pediatric population, including

the effect on oral and systemic health. In addition, the authors suggest interventions in SSB consumption from both a preventive and systems change level. As evidence continues to mount and indicate that SSB consumption is detrimental to the pediatric population, there is a need for immediate as well as long-term action to reduce the consumption of SSBs, which can lead to better outcomes in oral and overall systemic health.

SSBs: Impact on Pediatric Systemic and Oral Health

As health care providers, we understand the link between oral health and overall health. It is known that dietary habits are established during the first few years of life, including the prenatal period. By establishing a dental home at the appropriate interval, nutritional education can begin at a very early age, thus helping to pave a way for a healthier lifestyle. This corresponds to the current paradigm shift toward prevention and making the connection between oral health and overall health.

The National Health and Nutrition Examination Survey (NHANES), an annual program conducted by the National Center for Health Statistics (NCHS) and part of the Centers for Disease Control and Prevention (CDC), addresses the health and nutritional state of adults and children.²² The intake of SSBs is one of the various health topics that NHANES addresses. According to Marriot et al., NHANES data suggests the following: that the estimated total sugar intake decreased significantly among children from 2003–2004 to 2015–2016; there was over 50% decrease in total sugar intake, including from SSBs, among children aged 2–19; and although there is a current trend for a decrease in SSB consumption, 18.5%

of total sugar intake is from SSBs in children aged 2–19.²³ Therefore, the amount of SSBs consumed by children and adolescents still remains high and focus on its reduction is imperative.

Obesity

Multiple studies determined that high amounts of ingested SSBs are linked to various health issues, including weight gain, obesity and Type 2 diabetes. Bleich and Vercammen reviewed current literature and determined that the majority of the studies consistently established a relationship between the risk for being overweight or obese with SSB intake. Overall, the studies showed an increase of SSBs consumed per day led to an increase in body mass index (BMI) and a higher percentage of being overweight or obese; in sum, the risk of obesity grows with increasing SSB consumption.⁵

Although Marriott et al. found a decrease in SSB consumption since 2003, the negative impact of SSBs on children's health entails a need for greater focus on continued abatement in consumption.²³ One study by de Ruyter et al. provided 250 ml of either a SSB or sugar-free beverage daily for 18 months.²⁴ The results corresponded with the overall findings of the Bleich and Vercammen intervention studies: Consumption of the sugar-free beverage resulted in a decrease in BMI and weight, and therefore a decrease in obesity risk as compared to control groups.⁵ Overall, these findings support previous studies that found an association between SSBs and obesity risk.

In another study, Ebbeling et al. conducted a randomized trial that provided a home delivery of noncaloric beverages for one year to replace SSB consumption in children aged 13–19 years.²⁵ After one year, BMI and weight were significantly different from the control group; however, after an

additional year of follow-up, there were no differences between both groups.²⁵ This suggests that a constant intervention greater than one year may be necessary to implement a full change in dietary habits that can improve obesity. It is also evident that emphasis should be placed on displacing SSBs in a consistent manner with long-term goals in mind. Healthy People 2020 is an example of such goal-makings on the national level.

Healthy People 2020 “provides science-based, 10-year national

The study concluded that there was a direct correlation of increased consumption of SSBs and Type 2 diabetes, with up to a 26% increased risk for adult patients.

objectives for improving the health of all Americans” utilizing data gathered from needs assessments such as the NHANES report.²⁶ Some of the Healthy People 2020 goals include a reduction of the proportion of children and adolescents aged 2–19 years who are considered obese and the prevention of inappropriate weight gain in youth and adults.²⁷ In an effort to address these goals, the Western University of Health Sciences, College of Dental Medicine (WesternU CDM) implemented two methods to address these issues for the pediatric patients: integration of weight, height and BMI into the electronic health record (axiUm) and establishing obesity self-management goals with the patient and/or parent/guardian (**FIGURE 1**). Utilizing the BMI, medical history and dietary instruction as a starting point for this crucial conversation, the oral

health provider can objectively introduce a sensitive subject such as obesity or weight management to the parent/guardian, which then allows for a more constructive conversation. Incorporating motivational interviewing as the mode of conversation allows the patient and/or guardian to decide on their individual goals with a sense of confidence. This communication method provides a shared decision-making process and goals created will be more attainable for patients and their families. Motivational interviewing as a behavior modification strategy is addressed later in the article.

Type 2 Diabetes

With an increase of SSB consumption and obesity comes an increase in obesity-related risks, including Type 2 diabetes.⁵ Aside from the increased risk with obesity, SSBs may also increase dietary glycemic load resulting in insulin resistance.²⁸ Malik et al. provided a meta-analysis of studies that evaluated the intake of SSBs and risk of Type 2 diabetes. The study concluded that there was a direct correlation of increased consumption of SSBs and Type 2 diabetes, with up to a 26% increased risk for adult patients.²⁹

The results of the meta-analysis by Malik et al. agreed with the findings of the meta-analysis completed by Vartanian et al. that also found an association of soft-drink intake with increased risk of various medical problems, including Type 2 diabetes.³⁰ Similar results were provided by Bleich et al.⁵ and Xi et al. looked specifically at sugar-sweetened fruit juice and 100% fruit juice and found that a higher intake of sugar-sweetened fruit juice was significantly associated with risk of Type 2 diabetes while 100% fruit juice had no association.³¹

Although the research is limited, there is clear evidence that the consumption of SSBs does increase the

OBESITY SELF-MANAGEMENT GOALS FOR PATIENTS

Patient's Name and axiUm #: _____ Age: _____



Obesity screening every dental examination



Monthly check-ins for BMI at home



See a pediatrician, dietitian or nutritionist



Adequate sleep



Limit screen time



Healthy snacks



Lower intake of bad fats and sugar



Limit sodas and sports drinks



Family time outdoors



Regular physical activity

IMPORTANT:

Obesity screening, education, prevention and intervention will help prevent the onset of adult diabetes, cardiovascular disease and other health problems.

Self-management goal: 1) _____

On a scale of 1-5, how confident are you that you can accomplish the goal?
(NOT SO SURE) 1 2 3 4 5 (CONFIDENT!)

Parent/Guardian signature _____ Date: _____

Practitioner signature _____ Date: _____

Adapted with approval from DentaQuest Partnership

FIGURE 1. WesternU CDM obesity self-management goals sheet.

risk of Type 2 diabetes. At WesternU CDM, regular nutritional counseling bundled with motivational interviewing and caries risk assessment for the pediatric population allows oral health providers to help create dietary goals that can affect not only the patient's life, but also their family's life. With the opportunity to alter dietary habits prior to birth and starting with the pregnant mother, clinicians should perform nutritional counseling at all comprehensive and periodic oral examinations, if not more frequently. These opportunities for direct intervention with the child and parent/guardian are highly valuable and can be performed by all trained members of the oral health provider team (e.g., allied dental personnel and/or community health workers).

Oral Health

The link between high consumption of SSBs and high BMI, Type 2 diabetes and dental caries is well-established as is the significant correlation between obesity and dental caries. The challenge to dental professionals is incorporating education and intervention into practice to reduce these risk factors to patients' oral and overall health. In children especially, the relationship between BMI and caries risk underlines the need for greater interprofessional collaboration between oral health care professionals and other health care professionals.³² Physicians have historically tackled the obesity epidemic, but as research shows, the success of any intervention is dependent on the involvement of other health care providers, such as dental professionals.³³

Addressing SSBs: The Role of Oral Health Professionals

Due to frequent contact with child and adolescent patients, oral health

professionals are in a unique position to screen for high BMI-related risk factors of SSB consumption (among other detrimental nutritional habits), while promoting healthy weight in these same patients.³⁴ Existing research indicates that there is wide support among oral health professionals for taking a more active role in the prevention of obesity.³⁵ Currently, many general dentists, pediatric dentists and dental hygienists offer nutritional guidance related to caries prevention; however, very few provide weight-related screening. A study by Wright et al.

Three-quarters of pediatric dentists believed parents would be open to nutrition education, but only about half believed parents would accept obesity education.

assessed attitudes of pediatric dentists specifically toward obesity in childhood and SSBs and found that while 94% of pediatric dentists offer information or other interventions on SSB consumption, only a little over 17% offer childhood obesity education or recommendations. This study also underscored the divergence of attitudes toward two separate but related issues: Discussion and intervention in SSB use was identified as essential to dental practice, while broaching the subject of obesity was identified as secondary to the practice of dentistry and perhaps more appropriate in a medical context. Moreover, in another study, as interventions related to obesity screening became more involved — such as measuring height and weight or taking blood or saliva

samples — the frequency of dentists' participation declined.³⁶ These studies conclude that change will be seen once the majority of dental professionals are receptive to addressing weight management by utilizing novel methods.

Current research also shows that dental professionals admit that the potential to offend patients and parents is a significant barrier to providing both caries- and weight-related education.³⁴ When assessing perceived parental attitudes toward nutrition and obesity education and intervention, three-quarters of pediatric dentists believed parents would be open to nutrition education, but only about half believed parents would accept obesity education.³⁷ On the other hand, when parents themselves were surveyed regarding their attitudes toward healthy weight interventions for children in a dental setting, the response was overwhelmingly positive.³⁸ Surmounting this perceived barrier of parental disapproval will play a large role in increasing dental providers' willingness to broach BMI-related education and interventions. One method may be to engage parents and patients by sharing decision-making rather than insisting on the change. Certainly, ensuring culturally competent communication will improve the effectiveness of these parent-dental provider conversations. As Garcia et al. highlighted, the ideal time for developing these communication skills is during the student years.³² At WesternU CDM, dental students are introduced to these approaches (cultural competence, active listening, etc.) early in their first year of matriculation, and the concepts are reinforced and built upon as they continue into the students' subsequent years. The goal is to expand the current dental workforce's knowledge of the effects of

SSBs on oral health and healthy weight education as well as their ability to feel comfortable initiating the conversation with patients and their families.

Motivational Interviewing

In light of research showing that SSBs predominantly factor into the rise of childhood obesity, oral health providers can segue education about SSBs into an open dialogue about healthy weight management.³⁴ A study by Dooley et al. established four primary care interventions that successfully address weight management in pediatric patients. Of the four interventions, family-based interventions and motivational interviewing (MI) showed the most evidence of efficacy.³³ Moreover, a recent study by Albino and Tiwari reviewed behavioral interventions that are currently used in the dental realm and found that MI utilization resulted in the most success.³⁹ The shift toward MI in dentistry began in the early 2000s, though this method had been developed in the mental-health field 20 years prior in order to address addictive behavior.⁴⁰ According to Inglehart, oral health professionals are uniquely equipped to introduce effective behavior change as they engage patients in MI.⁴¹

Motivational interviewing is seen as a radical approach to instituting changes in behavior because it places the onus of decision-making into the hands of the patient (in the context of pediatric dentistry, into the hands of the parent or caregiver). Instead of the dental professional providing directives for behavioral change, the patient or their caregiver must internalize the education presented and reflect on whether the suggested change is relevant and/or attainable.⁴² The goal of MI is to generate intrinsic motivation by aligning

the patient's values and goals with the proposed change without impressing any judgment or coercion. In pediatric dentistry, including the parent or caregiver in MI about an intervention has the potential to impact the entire family beyond the child in question. Borrelli et al. found that parent-involved MI was correlated with significant progress in improved health behaviors, such as diet, physical activity and reduced screen time, as well as improved medical outcomes such as reduced BMI and lower dental caries risk.⁴³

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Studies have shown the efficacy of motivational interviewing across all ages. In one such study, parents who received MI for their preschool-aged children exhibited enhanced knowledge across a wide range of oral health subjects, such as the safest time to give SSBs, supervised brushing positions, fluoride varnish and the correct amount of toothpaste.⁴² In another study focusing on preschoolers, by improving clinical outcomes such as plaque index and gingival inflammation index, MI was shown to be a more successful oral health education model than traditional methods.⁴⁴ The first randomized clinical trial involving adolescents concluded that MI was more effective than the prevailing oral health education model in evoking change in the subjects' oral

health behaviors, including decreasing snacking frequency and increasing tooth brushing, which led to a statistically significant decline in dental caries.⁴⁵

At WesternU CDM, students are taught to utilize MI after gathering information from their patients in order to encourage lifestyle changes that bring about better oral and systemic health. As MI is a skill that is best honed with practice, over their four years, the dental students are given opportunities to apply MI principles in peer-to-peer activities, in simulated virtual patient workshops, at screenings of children from the community and during direct patient care. The successes seen in both sound research and anecdotal evidence demonstrate that MI is a powerful tool to bring about behavioral modification, which can then manifest in improved clinical outcomes, both on a local level and even as far as on state and/or federal levels.

Policies and Programs To Address SSBs

With scientific documentation linking the role of added sugars and SSBs in the development of cardiovascular disease, along with other systemic conditions in pediatrics, the WHO recommends the following: limiting the intake of added sugars to less than 10% of total calories and, if possible, to 5% of total intake calories.⁴⁶ To further support these recommendations, the American Academy of Pediatrics (AAP) has published several reports emphasizing and advising health care providers to "limit the consumption of fruit juice (i.e., no juice in children younger than 1 year, no more than 4 ounces per day in children aged 1–3 years, no more than 4–6 ounces per day in children aged 4–6 years and no more than 8 ounces per day in children aged 7–18 years)."⁴⁷ Based on the effects of SSBs on both pediatric oral

and systemic health, interventions should occur at multiple levels: community, direct patient care and systems' economic or social policy (FIGURE 2).

Federal Policies and Programs

In 2019, the AAP published a policy statement to support the reduction of "sugary drink consumption in children and adolescents."⁴⁶ The first public policy recommendation from the AAP focused on increasing the price of SSBs through an excise tax, whose funding would then be directed toward addressing the health inequities and disparities in pediatric populations.⁴⁶ Through a microsimulation analysis, Kristensen et al. estimated that implementation of a 1 cent per ounce national SSB excise tax would result in a reduction in obesity mostly among adolescents aged 13–18 years as well as a greater reduction in obesity among Blacks and Hispanics compared to whites by 2032. Particularly, Kristensen et al. noted that the 1 cent per ounce SSB excise tax would be the most effective economic federal policy change due to the generation of revenue to support preventive programs and activities in SSB, oral health and systemic health awareness.⁴⁸ The WHO supported the notion of a tax increase on SSBs, reporting that a tax increase of at least 20% is required to have the most significant and effective impact on the reduction of SSB consumption.⁴⁹

From the implementation of a federal SSB tax, the generated revenue would provide state and local agencies the ability to address health conditions associated with SSB, such as tooth decay, Type 2 diabetes, fatty liver disease and cardiovascular conditions. Suggested federal programs such as Women, Infants and Children (WIC) and the Supplemental Nutrition Assistance Program (SNAP) would receive funding to provide necessary changes to update their

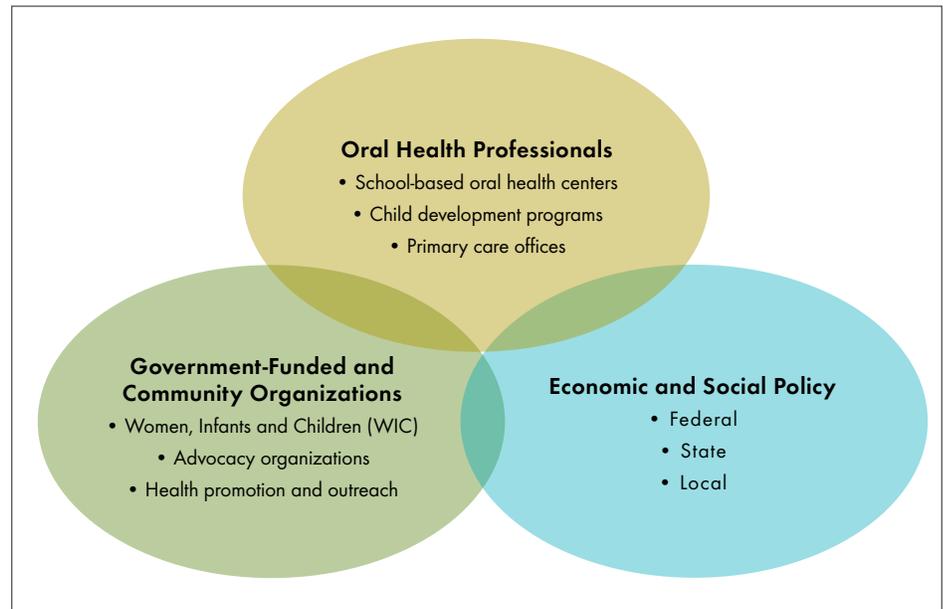


FIGURE 2. Interventions to reduce SSB consumption in children. This figure illustrates three different avenues to approach SSB consumption in the pediatric population.

current dietary guidelines to discourage SSBs from families' consumption.⁵⁰ In return, by focusing on prevention and intervention programs, this would result in a decrease in overall federal spending for future systemic diseases and more costly health care treatment.⁵¹

State and Local Policies and Programs

With California's Proposition 56 passing in 2016 and increasing the excise tax on tobacco products, the revenue generated was utilized in 2017 to address California's Medicaid dental payment reimbursement system (Denti-Cal) as well as physician services, the Family Planning, Access, Care and Treatment (FPACT) program, women's health services, the HIV/AIDS waiver services and Intermediate Care Facilities for the Developmentally Disabled (ICF/DD). This policy was a successful way to generate revenue that can be cycled back to provide services and address gaps in health care for the most needed populations.⁵²

Unfortunately, California lawmakers in June 2018 passed a law that prohibits any new state SSB tax until 2031; therefore, cities such as Berkeley,

Albany, Oakland and San Francisco have taken it upon themselves to address SSB consumption. In March 2015, Berkeley became the first U.S. city to tax SSBs at 1 cent per ounce.⁵³ After one-year post-tax implementation, a study was completed to determine the impact of the 1 cent per ounce tax to SSB. Results showed that SSBs were reduced by 9.6% while milk and water increased by 3.5%, and both grocery stores and consumers surveyed reported no loss in revenue or increase in bills, respectively.⁵³

In spite of the promising data from the city of Berkeley, policy proposals, amendments and execution at a system's level can span years; however, other ways to intervene in pediatric SSB consumption exist at the state and local levels. For example, working with organizations whose strength is in community health promotion and advocacy can assist in gathering the needs assessment and signatures required for future state and federal policy proposals. These community organizations, with the assistance of community health workers (promotoras), can also supplement

their current program with SSB reduction strategies during nutritional counseling sessions, educating families on the risks of SSB consumption.

Another avenue to decrease SSB consumption at a local level is through building relationships between health care practices, clinics and institutions with school districts. From an oral health perspective, establishing school-based oral health centers (SBOHCs), integrating SSB consumption information during nutritional counseling and establishing a self-management goal contract with the parent/guardian, builds upon sharing the responsibility of oral health improvement between child/parent and the oral health provider. With Denti-Cal providing reimbursement to certified providers registered for the Dental Transformation Initiative: Domain 2 for the Caries Risk Assessment (CRA) bundle that includes caries risk assessment, motivational interviewing and nutritional counseling (Proposition 56 generated revenue) and Medi-Cal Healthier California for All dental proposal seeking coverage of the CRA bundle for children aged 0–6 years, integrating documentation of SSB prevention during nutritional counseling and/or self-management goals is an opportunity for dental providers.⁵⁴

From an integrative approach, and in addition to an SSB excise tax, both the AAP and the American Medical Association suggest the following changes that can be made at a state and/or local level:

- Limiting access to SSBs in schools and other environments geared toward the pediatric population.
- Minimizing the opportunity to purchase SSBs at medical and health care facilities and encouraging the consumption of water, unflavored milk or unsweetened teas.

- Promoting “consumer awareness” through use of plain packaging and amendments of warning labels to include health indications.^{46,55,56}

Similarly, the California Medical Association and the California Dental Association (CDA) partnered to provide fact sheets on state proposals to support AB 765 (Wicks) “healthy checkout aisles,” which remove SSBs from being around or near the checkout counters at grocery stores,⁵⁷ AB 766 (Chiu) “portion cap rule,” which bans the sale of SSBs larger than 16 ounces at food-service

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establishments,⁵⁸ and AB 764 (Bonta), which limits promotional pricing of SSBs with high-caloric intake (i.e., prohibiting manufacturer coupons to retail stores that encourage SSB consumption).⁵⁹

Though SSB taxation is suggested to be the most effective methodology to decrease SSB consumption in the pediatric population, several publications address the need for state (and federal) government to support the decrease in SSB marketing geared toward children and adolescents.^{46–49,53–55} With social norms focusing less on everyday television for the infant, toddler, child and adolescent watcher⁶⁰ and more so on social media platforms, social vlogging and software application,⁶¹ marketing has also changed its way to

gear SSB consumption toward specific populations. The Center for Global Policy Solutions reviewed studies that utilized technology-based interventions through the use of a mobile application to address SSB consumption in minority or underserved populations.⁶¹ Though there was a slight increase in fruit and vegetable consumption and a slight decrease in SSB consumption, the data indicated that the change was not significant.⁶² The current limitation to the integration of software applications is that no longitudinal study exists that follows the consistent use of the application throughout a child’s growth.

Workforce Development

The final component to address consumption of SSBs is through workforce development and educational training. Integrating SSB prevention and intervention during didactic development as part of the nutritional guidance and clinical application during the doctorate program will further support health promotion and improvement in the oral and systemic health of the child. Several dental institutions throughout the U.S. have created obesity toolkits and curricula designed to address not only SSB consumption, but childhood obesity as well through screening, prevention, education and intervention.

Aside from direct patient care, health care professional schools often have student organizations with an arm focusing on advocacy and organized dentistry. The American Student Dental Association, for instance, elects two CDA advocacy representatives who act as a bridge between the state and dental institution and participate in state and federal advocacy and lobbying days. With review up in 2020 for AB 138 (Bloom), which

establishes a tax on the distribution of SSBs, and SB 347 (Monning), which mandates a warning label on SSBs to educate consumers,⁶³ the workforce is another strong arena for change.

Conclusion

Multiple studies have confirmed the linkage and association between SSBs and oral and systemic health (e.g., obesity and Type 2 diabetes) in the pediatric population, which has prompted additional research and support for SSB interventions. With prevention and intervention strategies incorporated at the community, direct patient care, education and policy levels, a uniform message regarding the effects of SSBs is necessary in order to work toward changing the current system. As oral health providers, utilizing behavior modification through motivational interviewing and documentation of oral health and weight management goals set by the patient/parent/guardian with the provider is an opportune way to address SSB consumption, its nutritional value and its effect on oral and systemic health. Though a state excise tax on SSBs is shown to be the most effective future intervention, local policy can more rapidly begin addressing SSB consumption by integrating SSB use prevention and intervention into the interprofessional curriculum of the future health workforce, training community health care teams in screening and counseling for SSB consumption and adopting behavioral interventions in clinical practice. ■

ACKNOWLEDGMENTS

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under Grant Number D85HP30837 Predoctoral Pediatric Training in General Dentistry and Dental Hygiene for grant amount \$1,499,999, with 0% match from nongovernmental sources. This information or content and conclusions are those of the authors and should not be construed as the official position or policy of nor should any endorsements be inferred by HRSA, HHS or the U.S. government.

The authors acknowledge WesternU CDM Dean Steven Friedrichsen, DDS, and Bradley Henson, DDS, PhD, for their support in continued research in the community, and Matthew Allen, DDS, for providing training in motivational interviewing through the DentaQuest Partnership Dental Care Management Collaborative.

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PRACTICE SALES • VALUATIONS/APPRAISALS • TRANSITION PLANNING • PARTNERSHIPS • MERGERS • ASSOCIATESHIPS

NORTHERN CALIFORNIA

ALAMEDA: *New Listing!* 4 Ops in busy shopping center, 29 yrs Goodwill, 2019 GR \$246K on 27 hrs/wk. Room to grow! #CA1268

ALAMEDA: *New Listing!* 4 Ops, Practice housed in a beautiful Victorian home. 2019 GR \$1.4M+. Real estate also available if desired. #CA1287

AUBURN & FOOTHILLS AREA: Fast growing practice in 2,500 sf w/ 6 equip. Ops, 1 add'l plumbed. 2019 GR on track to exceed \$1.2M on 3 avg. Dr. days/wk. #CA632

CONTRA COSTA COUNTY WEST: *New Listing!* 7 Ops, 48 years goodwill, 2019 GR \$1.6M+. Adj. Net \$700K+. New computers, nearly completely paperless, Digital X-ray, Diagnostic & Diode Laser. 8 hyg days/wk. and 25 NP/mo. #CA1487

EAST BAY: 5 Ops, 4 equipped. Beautiful updated digital office with 23 yrs Goodwill, Digital, Pano, Lasers, and Nitrous Oxide-ready. Avg 30 NP/mo. Open 4 days, this is a CASH AND PPO office! 2019 GR \$614K. #CA684

EAST BAY: Central beautiful location with 4 Ops in 1,350 sf. 2019 GR \$659K on only 4 doctor days/week. #CA644

GREATER EL DORADO HILLS: Multi-doctor, 3,000 sf office, 8 Ops, 7 Equip, I/O Cam, Digital X-rays & Pano. 2019 GR \$2.2M. Sellers will consider working back P/T. #CA578

GREATER SACRAMENTO: *Price Reduced by \$50K!* PPO Practice with 4 Ops, digital sensors, imaging system, I/O Cam. Practice open 33 yrs. 2017 GR \$652K; Office Condo available for purchase. #CA561

GREATER SACRAMENTO: Great area w/ 38 yrs Goodwill, 4 Ops in 1,100 sf. 2018 GR \$1M+ on 32 hrs/wk. #CA656

LAKE TAHOE AREA ENDO PRACTICE: 3 Ops, 3 digital sensors, Cone Beam in 1,100 sf. Consistent GR \$525K for the last three years on 32 avg. Dr. hrs/wk. #CA602

LAKE TAHOE AREA: GP practice with 5 Ops w/ 6th Open, Operatory views of Lake Tahoe, only 34 Delta Premier patients, 2,100 sf. 2019 GR \$579K on 22 avg. Dr. hrs/wk. #CA608

MENLO PARK: 4 Ops, rare opp in desirable area, Digital, Itero Scanner, Paperless, 6 hyg days. 2019 GR \$1M+. #CA686

MILLBRAE: *New Listing!* Role Reversal, 5 Ops. 2019 GR \$1M+ on 4 days/wk. and 6 hyg days. Seller offering 6 mo. employment and work back 6 mo. after sale. Digital, Pano, Waterlase & Periolas. #CA1139

NORTHERN CA PERIO: *New Listing!* 4 Ops, Consult Rm, Upgraded Tech with Digital, LANAP, Paperless. 2019 GR \$900K+. Draws from lg area with little competition. #CA1553

OAKLAND: *New Listing!* 3 Ops, Room to expand, Digital X-rays, Paperless, 40+ yrs Goodwill. 2019 GR \$675K with room to grow Specialties. Prime location, retiring doctor will help with a smooth transition. Seller-owned RE to purchase or lease. #CA1380

REDDING AREA: Modern practice in 1,600 sf with 4 equipped Ops, 1 additional plumbed. 2019 GR \$558K on 32 hrs/wk. #CA648

REDDING AREA: 6 Ops, Dentrix, Digital, 8 hyg days/mo. PPO/Cash. Motivated seller, low asking price. #CA668

ROCKLIN/LINCOLN AREA: 10 Ops, 6 equip, 4 plumbed, 2,619 sf. Growth potential in all Specialties, 2018 GR \$747K on 4 days/wk. #CA641

SACRAMENTO: Price Reduced \$70K! Hi-traffic location, Digital, Room to grow as specialties referred out. #CA590

SACRAMENTO: Northern area, 50+ yrs. Goodwill, 3 Ops +1, Digital, Paperless, Digital Pano. Specialty referred out. 2019 GR \$616K. #CA667

SACRAMENTO: 5 Ops, 4 Equip. 50+ yrs. Goodwill. Digital, CBCT, New computers, 2019 GR \$434K (seller took 3 mo. off) #CA678

SAN FRANCISCO FACILITY ONLY: 3 Ops in the heart of the city! Leasehold and equipment only, low rent. Asking \$125K. #CA677

SAN FRANCISCO: *Low Rent!* 30+ yrs Goodwill. Beautiful 4 Op office w/ strong hyg program. 2019 GR \$740K+. #CA657

SAN JOSE: Great cash flow in beautiful retail space with high traffic/visibility. Spacious 3,150 sf with 10 Ops, 6 Equip. 2019 GR \$745K. #CA600

SAN JOSE: 6 Ops, Paperless, Digital, CAD/CAM, Digital Pano. Seller will stay on P/T, if desired. 2019 GR \$1.3M+. #CA1140

SONOMA COUNTY: Lrg GP, 2019 GR \$2.3M+. Stand-alone 3,000 sf prime Real Estate, 72 NP/mo. & 10 hyg days. 6 Ops, Pano, Dexis, Cameras, Laser, Dentrix. Both Business & RE for sale or Lease. Doctor Retiring. #CA544

SONOMA COUNTY: 2019 GR \$939K. 1,000 sf, 3 Ops w/opportunity to expand. Paperless, Dentrix, Digital, I/O Cam. Selling both Practice and portion of dental building ownership. #CA594

VACAVILLE AREA: Centrally-located & hi-traffic location with 25+ yrs Goodwill, 5 Ops in 1,700 sf. 2019 GR \$556K on 32 hrs/wk. #CA645

VALLEJO: 4 Ops, 1,650 sf w/ below-market rent. 2019 GR \$791K, 4 hyg days/wk, low OH. #CA469

CENTRAL CALIFORNIA

CENTRAL COAST: 5 Ops, digital, 25+ yrs of goodwill. Newly renovated, the practice sees 30 NP/mo with strong hygiene program. Beautiful Location. 2019 GR \$1.1M+. #CA1218

CENTRAL VALLEY: *New Listing!* 11 Ops, Digital, Strong hyg. Bldg for sale with practice. 2019 GR \$3.4M w/ high Adj. Net income. #CA1444

CENTRAL VALLEY PEDO PRACTICE: Shared space w/ Ortho, 7 Op, 3,800 sf. 2019 GR \$610K as part-time practice. Great starter practice or satellite office. #CA660

FRESNO AREA: Price Reduced-under \$150K! GP/Prosth Practice prime for a GP buyer. 4 Ops with Digital Sensors, Film Pano, attractive office building and space. 2019 GR \$409K. #CA588

MODESTO AREA: Established neighborhood with 60+ yrs Goodwill. 5 Ops, 1,450 sf. 2018 GR \$1.1M+ on 3 day/wk. Dental Condo also available for purchase or lease. #CA635

MONTEREY: 4 Op, 1,600 sf in highly desirable area with plenty of free parking. 2019 GR \$938K on 32 hrs/wk. #CA650

STOCKTON: *New Listing!* 1/3-2/3 share of 3 GP partner practice. 2019 GR \$508K on 32 hrs/wk. Digital, paperless. Most specialty referred. Add'l 1/3 ownership of separately listed practice in group also avail, allowing 2/3 ownership. #CA1389

STOCKTON: *New Listing!* Unique opportunity to buy 1/3 share of a 3 GP, Mostly PPO, Digital, Partner practice. 2019 GR \$462K on 32 hrs/wk. Add'l 1/3 ownership of separately listed practice in group also available, allowing 2/3 ownership. #CA1624

STOCKTON AREA: 7 Ops, Associate-run, Digital, Paperless, Digital Pano, HMO/PPO, Paperless. GR \$679K. #CA572

STOCKTON AREA: Great opportunity to purchase practice and bldg, 3,000+ sf, 6 Ops, Good hyg recall. 2018 GR \$1M+ on avg 37 hrs/wk. #CA616

SOUTHERN CALIFORNIA

BAKERSFIELD: *New Listing!* 6 Ops, 40 years goodwill, with a great reputation in the area. 6 days hyg./wk. and most specialty work referred. Digital Pano, digital x-rays. 2019 GR \$600K. RE also for sale. #CA1274

BAKERSFIELD: *New Listing!* 7 Ops w/ high-end equipment-CEREC, Digital X-rays, Cone Beam, Implant motor. 7 hyg days/wk, room to grow. GR \$1M+ with low overhead. Bldg for sale at \$650K. #CA1120

BAKERSFIELD: Well-established, 5 Ops, 4 Equip. In-house dental lab. Condo also for sale. 2019 GR \$363K on 3 days/wk. #CA674

BAKERSFIELD PEDO: Rare opportunity to purchase a successful 30+ yr old Podo practice with Ortho and Oral Surgery services. Over 4K active patients, avg. 40 NP/mo. \$2.5M+ GR for past 3 yrs. #CA599

COVINA: 4 Ops, 67 yrs in location, 22 w/ seller. Strong hyg prog, room to grow w/ Specialties. 2019 GR \$804K. #CA692

EL CENTRO: Great location with low rent. 4 Ops, 3 Equipped, Digital, 25 Yrs Goodwill. 2019 GR \$850K. #CA680

HUNTINGTON BEACH: 5 Ops, Desirable location, Strong hyg prog. 2019 GR \$604K #CA685

HUNTINGTON BEACH: 4 Ops, located in a busy retail center with great visibility. Practice utilizes Digital X-rays and Easy Dental PMS. 2019 GR \$466K. #CA673

INLAND EMPIRE: 2 Dental Offices next to each other. One GP, One Ortho/Pedo. Digital, 13 Ops total. GR \$850K. #CA681

INLAND EMPIRE: 4 Ops, Beautiful office across from busy hospital. Digital, State-of-the-ART, RE also for sale. 2019 GR \$432K. #CA682

LAGUNA BEACH: *New Listing!* 2 Ops, private practice, office bldg on 2nd floor w/elevator. Nice location, est. 1975 with low overhead. 2019 GR \$161K. #CA1499

LONG BEACH: Family practice est. in 1950. 3 Ops. Digital, Strong hyg program. Great area. 2019 GR \$651K. #CA671

LOS ANGELES: *New Listing!* Associate-run, 6 Ops, parking, and room to grow. 2020 receipts are \$850K as of 9/1, will be \$1M+ by year-end, Digital, modern. #CA1681

NORTH ORANGE COUNTY: 5 Ops, open since 1965. Dentrix, digital Pano. Retiring seller will assist w/ smooth transition. One-story prof. bldg. 2018 GR \$231K. Room to grow. Most Specialty procedures referred out. #CA558

ORANGE COUNTY: 5 Ops, Beautiful office, Digital, Paperless, hi-traffic area with great signage and low-rent. 2019 GR \$501K. #CA670

ORANGE COUNTY: *New Listing!* 5 Ops, Digital, Retiring seller. Excellent reputation, affluent area, high quality care, Modern, welcoming office with strong hyg prog. Room to grow specialties. 2019 GR \$642K. #CA1676

ORANGE COUNTY: *New Listing!* Beautiful office located at a major intersection in a strip center. 2019 GR \$329K with low overhead and great take-home Net. 5 Ops, 3 equipped, seller works average 25 hrs./wk. Great potential, low asking price of \$175K. A must-see! #CA1728

OXNARD: *New Listing!* 4 Ops, Digital x-rays, Est. 35+ years ago. Seller has owned it for 3 years and has a primary office in LA and wants to sell. 2019 GR of \$662K. #CA1164

PALM SPRINGS AREA MULTI-SPECIALTY: Priced to sell @ \$775K! 5 Ops, lecture room, 28 yrs Goodwill. Hi-end, mostly cash patient base. Dentrix, Digital, CT Scan & Gemini Dual Wave Laser. History of \$1.2M+/yr on 4 days/wk. #CA604

SAN FERNANDO VALLEY: 10 Ops, 8 Equip, hi-tech, fantastic location. Digital, Pano, CT Scan. GR \$1.1M+. #CA664

SAN GABRIEL VALLEY: 4 Ops, Digital X-rays, 65 yrs Goodwill. Most specialty work referred out, most PPO plans are accepted. Busy road with great visibility, open 4 days/wk. Nicely appointed; excellent opportunity. #CA596

SIMI VALLEY: 6 Ops, 5 Equip, Great location, low rent, 45 yrs goodwill. 2018 GR \$297K w/ \$89K Adj. Net. #CA637

SOUTH BAY LOS ANGELES PODO: *New Listing!* 3 Ops + Recovery/Consult Room, Digital, well-run, RE also for sale. Potential upside with keeping Ortho in-house. 2019 GR \$668K #CA1653

SOUTH BAY LOS ANGELES: Ready to retire! 7 Ops, RE for sale, 50% Denti-Cal, some HMO/PPO. 2019 GR \$568K. #CA1050

SOUTH ORANGE COUNTY PERIO: 4 Ops, 3 Equip, Coastal Community, Modern, Busy strip center location near hi-end residential. 2019 GR \$845K. #CA643

SO CAL DESERT AREA: 4 Ops 27 yrs Goodwill. Strong hyg prog w/ hi-end patient base. 2019 GR \$809K. #CA691

SAN DIEGO

EAST COUNTY: *New Listing!* Convenient location w/ 3 Ops, 2 Equipped and Digital X-Rays. Retiring seller refers out most specialties, opportunity for growth. 2019 GR \$309K. #CA1236

ENCINITAS: 4 Ops. Busy retail center. Remodeled 5 yrs. ago with new equipment. Dentrix, Digital, Pano, and Laser. 4 hyg days/wk. 2018 GR \$813K. #CA574

LA JOLLA: UTC Area, Leasehold with patients. 7 Ops Digital in retail center with strong anchors. Priced to sell! #CA663

NATIONAL CITY: *New Listing!* 6 Ops, 14 yrs Goodwill, strip mall with high visibility, Digital, loyal staff and patients. 2019 GR \$754K. #CA1465

NORTH COUNTY: 5 Ops, 46 yrs. Goodwill, Dentrix, Digital, E4D, strong hyg program, most specialty referred. 2019 GR \$1.1M+. #CA689

SAN DIEGO: *New Listing!* 3 Ops, busy strip mall location, Digital, well-organized, office with stable patient base. 2019 GR \$686K. #CA1905

SAN DIEGO: *New Listing!* Rare opportunity in prime location. Solid practice with 17 yrs Goodwill. 5 hyg days/wk. 6 Ops, 5 Equip, digital X-rays, Pano. Most specialty work referred out. 2019 GR \$1.1M+. #CA1448

SAN DIEGO: 7 Ops, 5 Equipped, located in a large retail center. EagleSoft, PPO/Cash, 3 year average collections of \$509K. #CA687

OUT OF CALIFORNIA

HONOLULU, HAWAII: *New Listing!* Highly desirable area, 40 yrs Goodwill, 3 Ops, Digital X-rays, DigiDoc, Planmeca E4D, Laser, Densys Operating System. Seller is retiring. #HI1112

CENTRAL COAST, OREGON: Mins to ocean. 3 Dr. days/wk, 2 hyg days/wk. 2019 GR \$404K, positioned for growth, Doctor is retiring. #OR112

HILLSBORO, OR: *New Listing!* 5 Ops, Scan-X, Pano, Laser, and recent cosmetic upgrade. Great NP flow with 7 hyg days/wk. and 4 Doctor days. Near key employers, on a major thoroughfare. Room to expand. GR \$1.1M+. #OR1355

SOUTHWEST PORTLAND: 7 Ops, 6 Equip, Dentrix, Digital, Pano. Well-maintained leased space. 2019 GR \$598K. #OR115

BURIEN AREA, WA: 3 Ops, Busy Area w/foot traffic. Very low overhead and good cash flow. Could relocate in Bldg to bigger suite. #WA102

Political Discussions: Create Workplace Boundaries To Reduce Tension

TDIC Risk Management Staff

From morning news to your Instagram feed to catching up with friends, political issues are seemingly inescapable. Election season brings countless charged conversation topics that can polarize the friendliest practice teams. Even individuals who share the same political ideologies can differ on issues, expressions and comfort levels in discussing them. Instead of letting snide asides and volatile debates impede productivity and create potential issues, practice owners can take the lead in asking patients and staff to leave political discussions at the door. By establishing boundaries and de-escalating tension, conflicts between staff and patients can be minimized.

The Dentists Insurance Company's Risk Management Advice Line frequently receives calls from dentists who are unsure how to handle uneasy exchanges among staff members or between staff and patients. Advice Line analysts provide guidance to mitigate discomfort, stress, distraction and hostility — and the associated risks — of talking about politics and other sensitive topics that can enter workplace discussions.

A recent caller related that political discussions stemming from remarks about racial issues had been causing friction in the dental practice. One staff member expressed support for a candidate based upon their view that the candidate fought to ease racial tensions and unrest. Another staff member then felt compelled to bring up the candidate's voting history on legislation in these areas. The conversation quickly escalated, each staff member becoming increasingly entrenched in their position and loudly arguing their viewpoint.

The analyst advised the caller to let employees know that political topics create tension and unease; therefore, the office has established a policy that employees must refrain from having political discussions while at work, as it can make others uncomfortable or upset.

If you are facing similar issues in your practice, The Dentists Insurance Company recommends using language such as, "Teammates get upset when discussions on the job delve into political or religious topics because everyone,

while entitled to their opinion, can have very strong and differing points of view. That is why our office has established a policy regarding professional conduct in our practice. I am asking all of you to curtail any further discussion of politics or religious beliefs while at work to avoid making others uncomfortable or pressured to discuss topics that are not appropriate in the office."

Another caller was concerned that a front office employee was using headphones to listen to political news



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during the workday. While patients couldn't hear the radio program itself, the employee was sharing her own commentary and politically charged response to the news, which was making some patients uncomfortable. The analyst encouraged the dentist to share her concerns directly with the employee, referring to and reminding the employee of the specific policies in the employee manual.

So, how can you create boundaries and keep your workplace free from potential claims of a hostile work environment by employees and an overly familiar level of communication by patients? Start by understanding your rights and responsibilities as an employer:

- **Employees do not have the right to freedom of speech in the workplace.**

A private, at-will employer may have a policy in place that requires employees to maintain a politically neutral workplace. Note that employers may not limit employees from concerted activity discussing issues like wages, hours or working conditions. If, for example, a staff member voiced support of a certain candidate because of their stand on a specific labor issue, that speech would be protected. They may also discuss unlawful conduct in the workplace. But employees of private businesses do not have the freedom or right to express racist, sexist or other discriminatory comments when such comments would constitute violations of harassment and discrimination laws.

- **Political affiliation is not a protected class under federal law, but state political discrimination laws vary.** Employers are allowed to take action when an employee's expression of political views affects their job performance or that of their

co-workers. However, some states do protect employees from certain types of political discrimination, such as hiring or firing simply because of an employee's civic activities. For example, in California, Labor Code § 1101 prohibits employers from having "any rule, regulation or policy" (1) forbidding or preventing employees from engaging or participating in politics or running for office; or (2) "controlling or directing or tending to control or direct the political activities or affiliations of employees." That statute prohibits action against employees for political activities that do not directly affect job performance.

- **If one employee is uncomfortable, the work environment may be hostile.** While *hostile* may seem like a term that's open for interpretation, a *hostile work environment* is defined as "unwelcome or offensive behavior in the workplace, which causes one or more employees to feel uncomfortable, scared or intimidated in their place of employment."

That means general unpleasantness or rudeness isn't illegal. As an employer, it's your responsibility to ensure that your employees have a safe workplace environment, one without fear of harassment or discrimination, so you must set rules, enforce policies and be responsive when issues do arise.

Don't wait to take action.

Instead, establish expectations and clarify boundaries:

- **Consider creating a formal "politically neutral workplace" policy.** As a private employer, you may set rules around political talk the same way you would other behaviors that would impede

practice morale, patient comfort and productivity. For example, you can add a policy to your employee handbook that discourages politically charged discussions and a dress code policy that prohibits wearing apparel with political slogans or symbols.

- **Empathize with employees but be consistent in your response.**

The current environment and the constant stream of political news can weigh on employees, and they may often look to "vent" with their trusted team members. An emotional reaction to what is going on in the world is natural — but it should not affect or interfere with the objective of the practice, which is to provide the best care possible to patients. Remind your employees that the workday is an opportunity to leave these external stressors outside the practice walls and concentrate on what they do best: helping patients and their team members.

Take time to understand your state laws relating to politics in the workplace, document and clearly state your office's policies and intervene quickly and decisively if discussions become heated. While it may seem impossible to leave political discourse at the door, you can model and build a safe atmosphere where quality dentistry remains the focus of your entire team. ■

TDIC's Risk Management Advice Line is a benefit to TDIC policyholders. To schedule a consultation with an experienced risk management analyst, visit tdicinsurance.com/RMconsult or call 800.733.0633. For Risk Management guidance in Idaho, Oregon or Washington, call 800.452.0504.



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6185 “COMING UP” – SACRAMENTO’S NORTH VALLEY – CHICO
 Highly regarded as evidenced by 6-days of Hygiene. Revenues average \$470,000 per year. 4-ops, attractive setting.

6184 SAN FRANCISCO’S EAST BAY – LAMORINDA AREA Unique opportunity for nominal investment to practice in high income area. Revenues have averaged \$390,000 a year on part-time basis. Highly regarded.

6183 REDWOOD CITY Collected \$730,000 in 2019. 4-day Hygiene schedule. 5-ops, paperless, digital Pano. Ideal for nearby Dentist seeking larger facility, or acquisition vertically integrated into Buyer’s practice. Seller can associate up to a year for transition.

6182 SAN PABLO BAY – SOLANO COUNTY Collections last three years have averaged \$1,000,000. 2019’s Available Profits totaled \$374,000. Current performance trending \$1.1 Million. All specialty work referred. 4-Hygiene days. Paperless charting. Well-designed office. Great staff.

6181 CARMEL VALLEY’S “THE VILLAGE” - START-UP 48-year history providing dental care at this \$1 +Million location. Equipped & furnished 4-ops. Only practice in Village. Next practice 10-minutes away. Landlord is daughter of original dentist who worked as Hygienist and later Manager. Closed April. Purchase equipment & furnishings; enter into Lease, open doors, patients return. Operate out-of-network Full Price \$19,750.

6180 SAN FRANCISCO’S LOWER PACIFIC HEIGHTS Collected \$796,500 in 2019 with Available Profits of \$391,500 in 2019 with 9-weeks off. 2020 trending collections of \$810,000 with Available Profits of \$425,000. Fees shall continue! \$258,000 spent in décor, delivery systems & technology. Full Price \$550,000.

6177 SALINAS During Great Recession, Salinas dentists did well as Salinas Valley is one of California’s most productive agricultural regions. Salinas shall bounce back quickly from Covid Hangover. Under-performing practice collected \$935,000 in 2019. 5-days of Hygiene. Housed in beautiful 6-op suite. Condo optional purchase. Perfect platform to bring in specialists.

6176 SANTA CRUZ Delta PPO practice seeks Successor skilled in implants. Last 2-years averaged \$1,180,000 in Collections and \$735,000 in Available Profits. \$480,000 invested in technology. 4-days of Hygiene. Full Price \$675,000. Compare to similar nearby "For Sale" practice asking \$1,350,000 with another brokerage.

6174 HUMBOLDT COUNTY’S UNIVERSITY COMMUNITY – ARCATA Best location, great foundation. Owner works 3-day week by choice. 2019 collected \$360,000. Practice wants to be full time. Full Price \$30,000.

6172 WALNUT CREEK – OUT-OF-NETWORK 2019 collected \$850,000 with Profits of \$430,000. 4-days of Hygiene. Seller shall work-back to assist in transition.

6171 SANTA ROSA Great DNA in long-established practice. Strong patient foundation per 6+ day Hygiene Schedule. 2019 collected \$990,000 with available Profits of \$338,000. Great Team. Full Price \$213,750.

6165 ROSEVILLE ORTHO – OUT-OF-NETWORK Stanford Ranch. \$455,000 invested in build-out, furnishings, computers and equipment. 3-chair Bay. Digital Pan with Ceph. Averages 3 New Patients per month. Full Price \$125,000.

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CULVER CITY Grossed \$853,000 in 2019. Referred 55-Endo; 28-Perio; 60-OS & Implant cases last year. Loyal Patients.

EAST LOS ANGELES Long established. 2-days grossing near \$200,000 cash. Full Price \$150,000.

GP INNOVATOR Grossing \$1.7 Million; Nets \$1+ Million. Unusual opportunity. Very Conservative, Refers out a lot. Call Tom Fitterer.

HEMET Includes apartment and dental building. Long established. Beautiful 5-ops. Open part-time. Will do \$500,000.

KOREAN DENTIST SOUGHT FOR 2 YEAR APPENTICESHIP Learn while working. Implants, OS. Airplane provided. Great pay while learning to produce \$2 Million/year by Senior Korean Maestro. Call Tom Fitterer.

KOREATOWN Low overhead. No Denti-Cal. PPO & Cash. Grossing \$250,000. Full Price \$150,000.

LA HABRA Huge shopping Center. 6-ops. Seller will work back.

LA MIRADA \$5,000/month HMO check. Collects \$569,000. 7-ops; 2,700 sq.ft.; rent \$2,800. Entire 10,000 sq.ft. building For Sale. No vacancies.

LAGUNA NIGUEL Hi visibility shopping center. 3-ops Husband / Wife work part-time. Grossing \$414,000. Needs more Doctor days.

LAGUNA WOODS Did \$1 Million in 2019, will do \$1+ Million. Shopping plaza completed \$6 Million remodel. New tenants will be patient magnets. \$5,000/mth HMO. 4-ops, rent \$3,831. Successor double shifts with present crew. Near Leisure World and affluent new growth. Implant DDS will net \$500,000 working 3-days.

ORANGE COUNTY Merger candidate. Near Chapman and Tustin Streets. 4-ops. Merge or grow. PT owner grossing \$400,000.

PALM DESERT Hi identity on Highway 111. On 2-days grosses \$300,000. Full Price \$150,000.

PALM SPRINGS Grossing \$1.5 Million. Specialists gross \$300,000. Pay Owner \$150,000. Shall pay rent and practice loan. 8-ops. Full Price \$875,000.

PASADENA Busy shopping center near large medical center. Grossing near \$1 Million. If your lease is up, merge.

PASADENA Husband DDS / Wife Hygienist have small practice to merge. Lost lease.

PICO RIVERA Paramount and Whittier. High visibility shopping center. 4-ops. Grossing \$200,000. \$4,000/month HMO check.

REDLANDS Near City Hall. Rent \$1,400. No patients but ready to go. 3-ops plumbed 2-equipped. Full Price \$50,000.

RIVERSIDE 215 FREEWAY High visibility real estate. Make Implant & Family Dental Center. Riverside or Colton dentist should move here. 250,000 autos pass daily.

THOUSAND OAKS Grossing \$1 Million. One Partner willing to work back 3-to-5 years. 5-ops. Refers lots Specialists.

TORRANCE HMO check of \$5,000/month. 70,000+ autos pass popular intersection each day. Entrance to Palos Verdes. 6-ops in high visibility dental office. Gorgeous. Grossing \$700,000+.

UPLAND 3-ops. Grossing \$330,000. 3-days Hygiene. 5 Star Yelp Reviews.

4407 SAN MATEO GP Exceptional 5-operator San Mateo practice in popular health provider neighborhood generating significant daily business draw. Beautiful 2,000 sq. ft. seller-owned facility, handsomely equipped to highest standards. Average GR \$1.4M, average overhead 61%. Seasoned and loyal staff. Seller willing to help for a smooth transition. **PENDING**

4420 OAKLAND GP Seller retiring, offering 35 years of goodwill. Quaint Oakland location near the Grand Lake District. Charming and well appointed, this 4 op office has great visibility on a busy thoroughfare. Loyal staff and stable patient base with 2,160 active patients. Average GR over \$988K with an adjusted net of \$385K. 4 doctor days & 8 hygiene days per week with an emphasis on restorative and preventative care. Hygiene department generates over 50% of production. Terrific upside potential for a buyer. Asking \$710K. **SOLO**

4394 SANTA CRUZ GP Retiring seller offering 33+ years of goodwill in stunning 1,534 sq. ft. facility with 4 fully-equipped ops. Pristine leasehold improvements/gorgeous cabinetry make this a must-see! Prime corner location with dedicated parking lot, situated in one of the most desirable areas of Santa Cruz, close to shoreline and tourist attractions. 2019 GR \$887K with adj. net of \$353K. 1,500+ active patients with average of 19 new patients/month. Seller works 3+ days/week with 5+ days of hygiene. Asking \$729K.

4405 LOS GATOS GP 30 year practice in beautiful modern, office and desirable location with two 5 year options to extend lease. \$1.2M average gross receipts with 56% average overhead. Asking \$986K. **SOLO**

4351 SEBASTOPOL AREA GP & BLDG. Beautiful, modern practice in seller-owned building (available for purchase); 3 fully-equipped ops, room for a 4th. Pristine equipment including digital X-ray, most purchased 2016-2018. 2019 GR annualized at \$679K+ with adj. net of \$210K. Average 3.5 doctor days/week and 4 hygiene days/week. 800 active patients, all fee-for-service. 70+ years of goodwill = long-standing, loyal patient base in scenic vineyard country. Asking \$305K for practice, \$425K for building. Owner/doctor willing to help for smooth transition.

4406 PALO ALTO GP Offering 50+ years of goodwill in growing practice close to Stanford University. Great Palo Alto location with incredible visibility. 7 ops in recently remodeled 2,152 sq. ft. office. 1,400+ active patients. Pre-Covid hygiene schedule running at 8 days/week. 2019 GR \$1.5M+ with adj. net of \$518K. Services provided are typical of practice with emphasis on Restorative dentistry. Asking \$1,185,000. **PENDING**

4399 SAN JOSE GP Gorgeous office in pristine condition located on a well-traveled thoroughfare with incredible views of the eastern foothills. Approx. 2,000 active patients with 12-13 new patients per month. Approx. 8 hygiene days/week. Average GR \$1.3M. Asking \$977K. **SOLO**

4392 SAN JOSE GP Offering 40+ years of goodwill. Excellent location in beautiful bldg on well-traveled thoroughfare. 6+ ops in 1,882 sq. ft. Lots of natural light with views of the eastern foothills. 1,800 active patients. 8 hygiene days/wk. Average GR \$900K with adj. net of \$295K. Terrific upside potential. Asking \$558K. Owners will help for smooth transition.

4415 WATSONVILLE GP & BLDG

Offering 35 yrs of goodwill in the growing coastal community of Watsonville. Charming and renovated 4 op office in 1,320 sq. ft. Approx. 450 active patients with an average of 10 new patients/mo. Incredible upside potential with excellent management systems in place. Endo, Oral Surgery and all Ortho procedures referred out. Last 2 yrs average Gross Receipts \$275K with average adj net of \$159K on just 1.5 doctor days/week. Bldg condo is also available for purchase. Asking price \$175K for practice and \$300K for condo. **SOLO**

4418 PALO ALTO GP Palo Alto practice offering 75 years of goodwill. Located in highly desirable neighborhood, just a short walk from downtown. Clean, crisp, charming, and well appointed 3 op office with lots of natural light. Approximately 750-800 active patients (all truly fee-for-service). 2020 annualized GR \$1M+ with adjusted net of \$470K+. 3 doctor days and 3 hygiene days per week with upside potential. Emphasis on Restorative dentistry. Asking \$670K.

4416 SF FACILITY Located on Lyon street, closest major cross street - Lombard. 1,600 sq. ft. turn-key dental facility. This street level space has over \$350,000 of improvements completed for professional use and ready to go as a dental office. Asking \$35K.

4421 SAN BRUNO FACILITY 670 square foot 3 op facility with a reception area, a private office, a lab area, a sterilization area and a storage area. Located in prime location in a high-traffic area. Asking \$40K.

4362 MARIN COUNTY GP 36 years of goodwill, Seller-owned 1,550 square foot facility with 5 fully-equipped ops. Prime position in charming town; desirable area known for temperate weather, easy, outdoor living and natural beauty. No Delta Premier patients. Excellent reputation and word-of-mouth referrals. Retiring seller will help for smooth transition. Average Gross Receipts last 2 yrs is \$450K. Asking \$248K for the practice. Bldg condo is available for purchase.

4375 LOS GATOS DENTAL FACILITY Unique opportunity in highly desirable area! Seller offering two full suites of state-of-the-art equipment and modern, 2-operator facility including furniture, fixtures and leasehold assets in medical office building adjacent to Los Gatos Community Hospital. Asking \$250K.

UPCOMING: **REDWOOD SHORES GP, SAN JOSE GP & SILICON VALLEY GP**



Mike Carroll



Pamela Carroll-Gardiner



Mary McEvoy Carroll

CalRE# - 00777682

Steps to Becoming a DA and an RDA

CDA Practice Support

Formal, school-based education is not the only path to working in a California dental practice. A dental assistant (DA) can go through on-the-job training and take a few mandatory courses to launch a successful career in the profession. So, when a dentist meets someone they think would make a good assistant in their practice, it helps to know what is required to launch that individual's dental career. And if that individual, or an out-of-state trained DA, wants to pursue a license as a registered dental assistant (RDA), then knowing the steps and timeline can be invaluable. Also consider that both a DA and an RDA are eligible to earn a specialty certificate in either orthodontics or dental sedation by completing a dental board-approved educational program. For information on allowed duties for the different DA categories, refer to the table of permitted duties posted at the dental practice. This Q&A reviews the path to becoming a DA and then to becoming an RDA.

What training does a new DA need to have at the start of employment?

Soon after starting work, a new employee should undergo required Cal/OSHA training in injury and illness prevention, hazard communication and general safety. A new clinical employee must also have Cal/OSHA-required training in bloodborne pathogens and, if the employee must wear a respirator, in respiratory protection. Training on the dental practice's information

privacy and security policies and procedures must be done before staff members start working with patient information.

To take radiographs, a DA must successfully complete a course in radiation safety that is approved by the Dental Board of California. A list of such courses can be found on the dental board's website dbc.ca.gov. If an assistant completed radiation safety training out of state through a program accredited by the Commission on Dental Accreditation, the assistant can apply to the dental board for a California radiation safety certificate by submitting the "Out of State Radiation Safety Certification" form.

What about the mandatory courses – when is a new assistant required to take those courses?

When a DA has been continuously employed by the same dental practice for 120 days, the employer is responsible for ensuring the assistant completes within the first year of employment: 1) a dental board-approved, eight-hour infection control course, 2) a dental board-approved Dental Practice Act course and 3) a basic life support course offered by an instructor approved by the American Heart Association or American Red Cross or other course approved by the dental board. The infection control and Dental Practice Act courses are required to be taken only once, but the basic life support certification must always be current.

Do the specialty assisting certificate programs require a lot of time to complete? How do I find a program?

A list of providers is on the dental board website. The orthodontic assistant program must be a minimum of 84 hours and the dental sedation assistant program must be at least 110 hours. The hours are divided into didactic, laboratory and clinical instruction.

What does a DA need to complete before starting an application to become an RDA?

The applicant needs to have completed 15 months of satisfactory work with a dentist licensed in the United States; certification by employers using a board-provided form is required. An alternative path is to complete a California Department of Education-approved four-month educational program and 11 months of satisfactory work experience. With either pathway, the applicant also must have completed a board-approved coronal polishing course, have a California radiation safety certificate and completed the mandatory courses described earlier. The infection control and Dental Practice Act courses must be completed no more than five years from the date of application.

How does a DA who was trained outside California become licensed as an RDA?

The two pathways described in the previous Q&A are available to a DA trained outside California.

Where can the DA learn more about the RDA licensing exam?

Once a license applicant's application, with all the required documentation and fingerprints, is accepted by the dental board, the applicant will be sent information on scheduling and paying for the exam. The Candidate Handbook is available on the dental board's website.

An applicant should be aware of the rules regarding application abandonment. An application will be considered abandoned if the applicant:

- Fails to submit the application, examination or reexamination fee within 180 days after notification

by the board that such fee is due and unpaid.

- Fails to complete application requirements within one year after being notified by the dental board of application deficiencies.
- Fails to take the licensing examination within two years after the date their application was received by the board.
- After failing the examination, fails to take a reexamination within two years after the date the applicant was notified of such failure.

CDA Practice Support offers a flowchart, Steps to Becoming a California Registered Dental Assistant, that includes links to the necessary forms. ■

Regulatory Compliance appears monthly and features resources about laws that impact dental practices. Visit cda.org/practicesupport for more than 600 practice support resources, including practice management, employment practices, dental benefit plans and regulatory compliance.

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What Does the Patient Want and How Can They Pay for It?

Paul Hsiao, DDS, MPH, JD

There are dental procedures that dental plans cover and there are others they do not. Some people do not have insurance. Health care financing has been growing over the years. People are starting to use health care financing like they do their credit cards. If people want it now, they will find a way to pay for it. Therefore, major health care financing companies have started to emerge to fill this gap and meet the needs of the customers. But, are the terms of the financing explained to the patient beforehand? The terms should be explained by the health care financing companies or by the staff of the dental practices. Some dental practices use outside health care financing companies and others use in-house health care financing for major procedures. What people thought was out of their reach financially many years ago may be more attainable; however, are the terms of the financing disclosed and broken down in simple terms?

Under CDA's Code of Ethics section 1D, informed consent is considered "essential to the ethical practice of dentistry and reflects the patient's right of self-decision." Patients are usually offered a variety of treatment options with the pros and cons of each option, but this principle also applies to finances. Patients are offered different ways of paying for their treatments and have

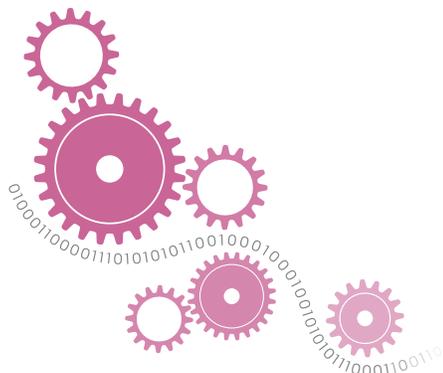
a right to decide which option is best for them. If they are aware of the duration and cost structure, then who are we to judge how they spend their money? We just need to be fair with full disclosure.

We also have an obligation to inform patients of their present oral status under Code section 1F. If we present the current oral status to the patient and treatment options including no treatment and they choose their treatment plan and know the terms of their third-party financing, then we have accomplished our goals of informing the patients so they can make the best choices for themselves. We cannot dictate their treatment because their chosen treatment is influenced by not only what we say, but what they want, what their significant other wants and what others tell them. If we are fair, the amounts are presented and broken down and the signature is on the dotted line, then we have consent to proceed with the treatment. Furthermore, at any point during the treatment plan presentation or even before treatment is performed, the patient can change their mind. We are not going to force them into the entire treatment plan if there is a hiccup in their finances.

Following Code section 7A.3, "A dentist shall avoid billing for

services not rendered. If payment has been received for a service that is ultimately never rendered, the dentist shall arrange to refund any overpayment immediately." Theoretically, we should be billing the treatment as it occurs or as we work on specific teeth. We should not have patients pay for phase four of the treatment when we are still working on phase one. Transparency makes everything fair. If the patient knows exactly what they are getting, we are transparent. Thus, if they need financial assistance from third-party financing, it is ultimately their choice. ■

Paul Hsiao, DDS, MPH, JD, is a general dentist practicing in Fresno, Calif. He is a fellow of the American College of Dentistry and the International College of Dentistry. Dr. Hsiao served on the CDA Judicial Council.



A look into the latest dental and general technology on the market

Sennheiser MKE600 Shotgun Microphone (\$329, Sennheiser)

When the pandemic forced many to embrace remote work technology, conferencing expectations rapidly shifted. What was once acceptable annoyances – jittery, washed-out video with barely intelligible audio that sounded like the speaker was down the hallway – became constant pain points that hampered productivity. Some users looked to video production hardware to improve teleconferencing quality, evidenced by more people showing up to meetings with broadcast microphones, headsets and AirPods headphones. The Sennheiser MKE600 shotgun microphone is another step deeper into the video production world: This highly directional microphone delivers clear vocal audio despite the device being nowhere in the camera frame.

Measuring 10 inches long, the MKE600 is a lightweight, unassuming tube that hides a host of audiophile features. It comes with a leather bag, shock mount and foam windscreen – all must-haves for shotgun microphones. The MKE600 uses a three-pin XLR output and requires phantom power to operate, meaning that it will take additional hardware and know-how to make it work with most computers and mobile devices. Those who forge ahead with an audio interface (like the MXL MicMate Pro) will find a competent, rugged microphone that captures voice in noisy environments up to 4 feet away. It is built to reject unnecessary background noise, and even in a busy dental clinic, does not transmit the sound of a high-speed handpiece to the audience unless it is directly pointed at one. Wind is a concern, as the MKE600 struggles to filter out the breeze, so those looking to use it in an outdoor situation may want to look at different options. Overall, the Sennheiser MKE600 is a fantastic microphone that can improve the video conferencing experience by capturing users' voices clearly while remaining off-camera.

– Alexander Lee, DMD

Honey (Free, Honey Science LLC)

Online shopping has surged during the pandemic as consumers seek contactless methods to purchase their everyday household needs. Smart shoppers save money by using promo codes at various retailers to receive discounts at checkout. Some receive promo codes personally from retailers to use while others comb the internet to find valid codes. Honey Smart Shopping Assistant for desktop browsers simplifies this process by collectively finding discounts from its extensive network of members and automatically applies them to shopping carts at checkout.

Joining Honey is free and requires installation of a desktop browser extension for Chrome, Safari, Firefox or Opera. When shopping online at supported sites, the “h” logo of the extension turns from gray to orange, indicating that Honey can apply its list of known codes during checkout. When checking out, the assistant opens a pop-up window where shoppers can click on “Apply Coupons,” which starts the automatic process of entering all available codes individually to see which yield maximum savings. The assistant supports more than 37,000 shopping sites and tracks codes used by all its members to constantly update its database of valid discounts. Shoppers can also add specific items to a droplist on a supported site by clicking on the hovering “h+” orange logo on an item page, which sends alerts when there are price drops. Shoppers can participate in a rewards program by activating offers and making purchases at participating sites, which earns them Honey Gold. For every 1,000 Honey Gold earned, shoppers are rewarded with a \$10 gift card for popular retailers. Shopping with Honey is a pleasant experience, with notifications that are discreet but informative and with privacy in mind. Shoppers are given a full disclosure on what data the assistant uses and what it does with the information. Detailed preferences allow for shoppers to disable various features of the assistant to customize their experience. Shoppers can expect to save some money instantly with the assistant while shopping online normally without changing their habits.

With the substantial increase in online retail purchasing during the pandemic, shoppers can use Honey Smart Shopping Assistant to find discounts automatically and effortlessly.

– Hubert Chan, DDS

Bid for good.

Join an online auction to support CDA Foundation programs.

Help bring access to essential oral health care to underserved communities. Take part in an online auction this November to bid on fun prizes – for yourself or to fill your holiday shopping list. And feel good that the proceeds will support programs like CDA Cares and ongoing efforts to share health, hope and happiness with Californians most in need.

Mark your calendar.

Bidding opens at noon on Friday, November 20 and closes at noon on Saturday, November 21.

Learn more at cdafoundation.org/events or text **CARE4HEALTH** to **51555** for updates.

Journal

CALIFORNIA DENTAL ASSOCIATION

