DENTAL STUDENT RESEARCH:
PEDIATRIC ORAL HEALTH
AND VULNERABLE POPULATIONS

Francisco Ramos-Gomez
DDS, MS, MPH
Let’s go!

Discover an online shopping experience that was built to deliver CDA members the dental supplies they need at discounts that make a difference.

Price compare and save at tdsc.com.

Price comparisons are made to the manufacturer’s list price. Actual savings on tdsc.com will vary on a product-by-product basis.
DEPARTMENTS

405 The Editor/End First Exposure: Dentistry’s Biggest Opportunity in the Opioid Crisis

407 Impressions

455 RM Matters/Depending on Staff To Manage Patients? Educate Them First

459 Regulatory Compliance/Patient Access to Their Information

466 Tech Trends

FEATURES

413 Dental Student Research: Pediatric Oral Health and Vulnerable Populations
An introduction to the issue.
Francisco Ramos-Gomez, DDS, MS, MPH

415 Effects of an Educational and Outreach Intervention on Community Oral Health Workers
This pilot study examines caregivers’ knowledge, attitudes and practices regarding their child’s oral health changes after an educational intervention.
Gabriela Salcedo, DDS; Francisco Ramos-Gomez, DDS, MS, MPH; Hamida Askaryar, RDH, MPH; Chi-Hong Tseng, PhD; and Donna Kritz-Silverstein, PhD

423 Child Misbehavior in the Dental Setting Is Generally Assumed To Be Fear
The aim of this study was to compare provider ratings of fear and defiance to standardized assessments of children’s fear and defiance.
Imran Ahmed, BS; Shanelle Shahery, BA; and Clarice S. Law, DMD, MS

429 Factors Associated With Hispanic Children’s Dental Utilization in Imperial County: CA-CORD Project
This study highlights the need to focus on social determinants of health because broader level factors can influence child dental utilization.
Erin Dougherty, MPH; Aarti Gupta, BDS; Tracy L. Finlayson, PhD; Shih-Fan Lin, DrPH; Andreia Morales Cascaes, DDS, MPH, PhD; and Guadalupe X. Ayala, PhD, MPH

439 Case Report: Integrating Teledentistry To Augment Clinical Outcomes in a School-Based Setting
This case report discusses how a network of health care providers can apply teledental technologies to expedite oral health intervention and pain relief.
Corey D. Stein, DMD, MS; Mahmoud Hamad, BA; Alexander Lee, DMD; and Marisa K. Watanabe, DDS, MS

447 Survey of Dental Students and Recent Graduates’ Knowledge, Attitudes and Practices in Regard to Treating Patients With Special Health Care Needs
This study investigated dental students and recent graduates’ level of knowledge, attitudes and practices treating patients with special health needs.
Haejin Kang, BS; Francisco Ramos-Gomez, DDS, MS, MPH; and Hamida Askaryar, MPH, RDH
CDA classifieds work harder to bring you results. Selling a practice or a piece of equipment? Now you can include photos to help buyers see the potential. And if you’re hiring, candidates anywhere can apply right from the site. Looking for a job? You can post that, too. And the best part— it’s free to all CDA members. All of these features are designed to help you get the results you need, faster than ever. Check it out for yourself at cda.org/classifieds.

Published by the California Dental Association
1201 K St., 14th Floor
Sacramento, CA 95814
800.232.7645
cda.org

CDA Officers
Natasha A. Lee, DDS
PRESIDENT
president@cda.org

R. Del Brunner, DDS
PRESIDENT-ELECT
presidentelect@cda.org

Richard J. Nagy, DDS
VICE PRESIDENT
vicepresident@cda.org

Judee Tippett-Whyte, DDS
SECRETARY
secretary@cda.org

Steven J. Kend, DDS
TREASURER
treasurer@cda.org

Craig S. Yarborough, DDS, MBA
SPEAKER OF THE HOUSE
speaker@cda.org

Clelan G. Ehrler, DDS
IMMEDIATE PAST PRESIDENT
pastpresident@cda.org

Management
Peter A. DuBois
EXECUTIVE DIRECTOR

Jennifer George
CHIEF MARKETING OFFICER

Carrie E. Gordon
CHIEF STRATEGY OFFICER

Alicia Malaby
COMMUNICATIONS DIRECTOR

Editorial
Kerry K. Carney, DDS, CDE
EDITOR-IN-CHIEF
Kerry.Carney@cda.org

Ruchi K. Sahota, DDS, CDE
ASSOCIATE EDITOR

Brian K. Shue, DDS, CDE
ASSOCIATE EDITOR

Gayle Mathe, RDH
SENIOR EDITOR

Francisco Ramos-Gomez, DDS, MS, MPH
GUEST EDITOR

Andrea LaMattina, CDE
PUBLICATIONS MANAGER

Kristi Parker Johnson
EDITORIAL SPECIALIST

Blake Ellington
TECH TRENDS EDITOR

Jack F. Conley, DDS
EDITOR EMERITUS

Robert E. Horsemann, DDS
HUMORIST EMERITUS

Production
Val B. Mina
SENIOR GRAPHIC DESIGNER

Randi Taylor
SENIOR GRAPHIC DESIGNER

Upcoming Topics
August/Craniofacial Physiology
September/Evidence-Based Dentistry
October/Periodontics

Advertising
Sue Gardner
ADVERTISING SALES
Sue.Gardner@cda.org
916.554.4952

Permission and Reprints
Andrea LaMattina, CDE
PUBLICATIONS MANAGER
Andrea.LaMattina@cda.org
916.554.5950

Subscriptions
Subscriptions are available only to active members of the Association. The subscription rate is $18 and is included in membership dues. Nonmembers can view the publication online at cda.org/journal. Manage your subscription online: go to cda.org, log in and update any changes to your mailing information. Email questions or other changes to membership@cda.org.

Journal of the California Dental Association (ISSN 1043–2256) is published monthly by the California Dental Association, 1201 K St., 14th Floor, Sacramento, CA 95814, 916.554.5950. Periodicals postage paid at Sacramento, Calif. Postmaster: Send address changes to Journal of the California Dental Association, P.O. Box 13749, Sacramento, CA 95853.

The California Dental Association holds the copyright for all articles and artwork published herein. The Journal of the California Dental Association is published under the supervision of CDA’s editorial staff. Neither the editorial staff, the editor, nor the association are responsible for any expression of opinion or statement of fact, all of which are published solely on the authority of the author whose name is indicated. The association reserves the right to illustrate, reduce, revise or reject any manuscript submitted. Articles are considered for publication on condition that they are contributed solely to the Journal.

Copyright 2018 by the California Dental Association. All rights reserved.

Stay Connected cda.org/journal

Journal of the California Dental Association, Vol. 46, No. 7, July 2018
404 JULY 2018
Sometimes you read a research article and it hits you between the eyes like a sledgehammer. So it was when I read “Prescription Opioids in Adolescence and Future Opioid Misuse.”¹ It made me really reconsider the impact dentists can have on ameliorating the opioid crisis.

The devastation of prescription opioid misuse and its associated overdose deaths can hardly be overstated. According to the CDC, “opioid overdose emergency department visits rose 30 percent in all parts of the U.S. from July 2016 through September 2017.”² Midwestern states were particularly hard hit with a 70 percent increase in opioid overdoses. Opioid overdoses increased for both women (24 percent) and men (30 percent) as well as in all age groups. “People who have had an opioid overdose are more likely to have another [overdose] … Opioid overdoses in large cities increased by 54 percent in 16 states.”²

When I first wrote about the United States opioid crisis in 2015, the death rate from prescription opioids was about the same as the number of fatalities that could be expected if two jumbo jets crashed … every month.³ Now the figures are even worse. It is more like three jumbo jets full of victims every month.

Some regions are more hard-hit than others. The drug overdose death rates in those high-incident areas are even more harrowing. Whereas the national death rate is just over 19 per 100,000, Pennsylvania has a rate of 37, Ohio and New Hampshire have rates of 39 and West Virginia has a rate of 52. These top four states accounted for more than 10,000 deaths in 2016.

These statistics should spur everyone to try to do something to stem this tide of tragedy.

Legitimate use of prescribed opioids is known to be associated with opioid misuse among adults.¹ The use of prescription opioids to relieve chronic back pain carries such a substantial risk of future opioid misuse that it has been suggested that the risk outweighs the analgesic benefits. Though this risk pattern has been shown in adult populations, the 2015 Miech et al. study investigated the size of the risk in an adolescent population.

“An association between legitimate opioid use before high school completion and an increased risk of subsequent misuse after high school could change the risk/benefit considerations for clinicians who treat pediatric patients with painful conditions.”¹

What they found was striking.

“Legitimate opioid use by 12th grade significantly predicts future opioid misuse after high school. However, this association is concentrated among adolescents who are least expected to misuse opioids: 12th-grade students who have little to no history of drug use and strong disapproval of marijuana use.”¹

In the overall sample, individuals who have an opioid prescription by the 12th grade are, on average, 33 percent more likely to misuse prescription opioids after high school by age 23 than those with no history of an opioid prescription … Specifically, among respondents with low predicted risk for future opioid misuse in 12th grade … an opioid prescription increases risk for opioid misuse after high school threefold.”¹

To reiterate, “among 12th-grade students who have little experience with illegal drug use and strongly disapprove of marijuana use, a legitimate opioid prescription predicts opioid misuse after high school.”¹

The authors postulate that the “novelty of drug-use effects may help explain why an opioid prescription predicts future opioid misuse most strongly among individuals with little to no experience with use of illegal drugs. For these drug-naïve individuals, an opioid prescription is likely to be their initial experience with an addictive substance. Most likely the initial experience of pain relief is pleasurable, and a safe initial experience with opioids may reduce perceived risk. A pleasurable and safe initial experience with a psychotropic drug is a central factor in theories of who goes on to misuse drugs.”¹

—Kerry K. Carney, DDS, CDE

“Among 12th-grade students who have little experience with illegal drug use and strongly disapprove of marijuana use, a legitimate opioid prescription predicts opioid misuse after high school.”
It is important to emphasize that their “results do not support legitimate opioid prescription use, by itself, as a major contributor to chronic opioid misuse, at least not by age 23.” But they do emphasize the importance of their findings for clinical practice:

For clinical practice, the results suggest an unrecognized risk of opioid prescribing. This risk should be incorporated into prescribing decisions and patient counseling. Until recently, the short-term use of opioids to treat pain was thought to carry a negligible risk for precipitating future misuse. Our current study and others have associated short-term prescriptions with misuse for some youth. When informed of these risks for children, parents may opt for nonopioid options as the initial treatment of minor painful conditions.

There are many factors that may influence the numbers of people misusing opioids but dentistry has an important role to play. Dentists are responsible for only a small percentage of all opioid prescriptions written in the United States. However, we play a crucial role because dentists are the primary prescribers of opioids for adolescents. We write more than 30 percent of opioid scripts for the population aged 10 to 19. This seems logical because this young population has few needs for postsurgical or chronic pain medication. Traumatic accidents and oral surgery are probably the most common events that require pain management in this age group.

We may be crucial to this young population. When we write a script for a completely appropriate opioid for short-term, postsurgical pain management, we need to realize that we may be responsible for that child’s first exposure to opioids. This young population appears to be more at risk than the adult population for later opioid misuse when their first exposure is for a legitimate need from a trusted oral health care provider.

If we tie these research findings to what is well-proven and well-known about the susceptibility of the developing brain in the adolescent to the introduction of pleasurable experiences and subsequent risk behaviors to reproduce this emotional state, we should be thunderstruck. We should have a heightened concern as individuals and as a profession about our prescribing and dispensing of opioids to this significantly more vulnerable population.

It is fortunate that we have alternatives to help manage dental pain. Recent evidence indicates that 400 mg of ibuprofen in combination with 1,000 mg of acetaminophen has proven to be more effective than opioids in controlling pain and reducing inflammation. We may not have to be responsible for a child’s first exposure to opioids if we first try simple, easily accessible, over-the-counter medications.

We need to understand fully our crucial role. We do not have to be the provider of the first opioid exposure to a pediatric population at risk for later opioid misuse. We need to be able to translate the risk/benefit balance of that first opioid exposure during the informed consent discussion with the pediatric patient’s parent/guardian. In the context of the current opioid crisis, our most important contribution to the future health and welfare of our adolescent patients may be the pain management recommendations we make.

REFERENCES

The Journal welcomes letters
We reserve the right to edit all communications. Letters should discuss an item published in the Journal within the last two months or matters of general interest to our readership. Letters must be no more than 500 words and cite no more than five references. No illustrations will be accepted. Letters should be submitted at editormanager.com/jcaldentassoc. By sending the letter, the author certifies that neither the letter nor one with substantially similar content under the writer’s authorship has been published or is being considered for publication elsewhere, and the author acknowledges and agrees that the letter and all rights with regard to the letter become the property of CDA.
The Greatest Fear of All

David W. Chambers, EdM, MBA, PhD

Snakes and spiders are often anxiety provoking and even debilitating. Urban legend has it that public speaking is the most widespread fear. Millennials tweet the abbreviation FOMO to reference “fear of missing out.” As real as these are in specific situations, they are not the greatest fear because potentially problematic situations can be avoided.

The real fear must be a constant, inescapable threat that puts our very being or sense of identity at risk. And the biggie is fear of being wrong or FOBW. To live in society means constant exposure everywhere to others who instinctively are on the lookout for catching us off base.

The “wrong” treatment plan, a practice philosophy others disagree with, supporting the wrong candidate, being too adventuresome or too conservative about technology — somebody is bound to disagree. And this goes beyond an act or a statement: It is about our identity. It is fear of BEING wrong — the wrong sort of person. Antifluoridationists, amalgam-free dentists, absentee corporate owners, cosmetologists and young practitioners with high educational debt are not colleagues who, among their many virtues, also sometimes act and say things we would not. They are the wrong kind of people. We push back against FOBW exactly because it is a threat to our identity.

The best protection against FOBW is to find a justification for our position and any plausible justification will do. All we really need is to convince ourselves that there is some reason for our being the way we are. We are quite skilled at this. In philosophy there is even a specialized subdiscipline devoted to this skill called casuistry.

Justifications are ad hoc, disposable and easy. There is no requirement that our justifications be consistent. In fact, the ADA Principles of Ethics states in the introduction that “principles can overlap each other as well as compete with each other for priority.” Conspiracy theories are the general purpose, industrial-strength justification. Usually we pick one that works at the moment and that is sufficient.

Because the utility of justifications is self-protection, they are weak equipment for advancing the common good. In fact, they often block constructive discussion. Virtually no one is incapable of manufacturing an excuse against considering others’ points of view. Flip back and forth between Fox and MSNBC to test this theory. Advocates on both sides of the abortion issue or government spending or live patients on one-shot initial licensure exams are fully justified. Evidence-based dentistry has had less effect on practice than its advocates had hoped, to some extent because we have not paid sufficient attention to the integration of the multiple valid justifications for the complex practice of dentistry.

FOBW causes deep pain. But pain has survival value in directing our responses toward safer behavior. Justifications are cheap, temporary placebos.

The nub:
1. The greatest fear of all is fear of being wrong.
2. The best defense against FOBW is self-justification and any justification will do.
3. Sometimes we are wrong and justification prevents learning.

David W. Chambers, EdM, MBA, PhD, is a professor of dental education at the University of the Pacific, Arthur A. Dugoni School of Dentistry, San Francisco, and the editor of the American College of Dentists.
Common Pain Relievers Beat Opioids for Dental Pain Relief

Over-the-counter pain pills are safer and more effective than prescription opioids for controlling pain following dental procedures, according to a study published in April 2018 in the Journal of the American Dental Association.

Researchers analyzed five reviews of studies of medication and medication combinations for pain relief. They included only reviews of high or moderate methodological quality.

The data included many randomized trials on the use of oral medication for the most severe kinds of postoperative dental pain — for example, the pain following the extraction of a molar. More than three dozen drugs and drug combinations were tested in various dosages.

The researchers conclude that the most effective pain relief with the fewest side effects comes from a combination of 400 milligrams of ibuprofen with 1,000 milligrams of acetaminophen. No opioid or opioid-containing medicine or any other combination of drugs was more effective.

Co-author Anita Aminoshariae, an associate professor at Case Western Reserve University, said there may be some people who can get relief only with opioids. But for most patients, she said, opioids are not only less effective, they also have unpleasant side effects, including nausea, constipation and dizziness. They also carry a high risk of addiction.

“You have to start with an NSAID,” she said, referring to a nonsteroidal anti-inflammatory drug. “If that doesn’t work, add (acetaminophen). No one should go home in pain, but opioids should not be the first choice.”

Read more of this study in the Journal of the American Dental Association (2018); doi.org/10.1016/j.adaj.2018.02.012.

More California Children Consuming Sugary Drinks

Nearly one-third of California children between the ages of 2 and 11 drink one or more sugary drinks per day, according to a UCLA study. That percentage represents an alarming increase since 2009, when just over one-quarter of the state’s children had one or more sugary drinks per day.

Conducted by the UCLA Center for Health Policy Research and funded by The California Endowment, the research analyzed California Health Interview Survey data on sugary drink consumption among California children from 2003 to 2014. Sugary drinks include soda, sports drinks, energy drinks and tea and juice drinks with added sugar, but do not include diet beverages or 100 percent juice.

“The numbers we observed are especially troubling because they show that the reductions in consumption observed in the past are reversing,” said Susan Babey, PhD, lead author of the study and co-director of the UCLA Center for Health Policy Research’s Chronic Disease Program.

Between 2003 and 2009, the proportion of children consuming at least one sugary drink per day decreased from 49 percent to 26 percent. However, since 2009, the percentage has risen to 31 percent. The researchers also found disparities in sugary drink consumption rates from region to region within the state. Nearly 40 percent of young children in San Bernardino County had at least one sugary drink per day, compared to less than 30 percent in the more affluent San Diego County.

According to previous research by Dr. Babey, one in three young adults in California already has prediabetes, a precursor to life-threatening Type 2 diabetes.

“This study shows that children are still drinking too much sugar. In order to keep our kids healthy and our chronic disease rates and costs from skyrocketing, we need to reverse this trend,” said Flojaune Cofer, state policy director at Public Health Advocates, a California-based nonprofit dedicated to addressing policy solutions to emerging health issues. “The problem is especially severe among low-income communities, heightening the need for local and state policymakers to redouble efforts to protect these communities.”

Read more about this study at healthpolicy.ucla.edu.
Bacteria Boost Drug Resistance in Early Childhood Caries

Researchers from the University of Pennsylvania School of Dental Medicine recently discovered that many cases of early childhood caries result from dental plaque that contains both bacteria and fungus working together to make the biofilm on the teeth more pathogenic and difficult to remove. Now they have shown that these two types of microorganisms synergize to enhance drug resistance, enabling the fungal cells to avoid being killed by antifungal therapies; but simultaneously targeting the matrix produced by the bacteria along with the fungus offers a way around this protection, according to the study published in the ISME Journal.

During the last several years, researchers have observed that the dental plaque in children with early childhood caries often contained Candida albicans, a fungal species that normally colonizes mucosal surfaces, in addition to Streptococcus mutans, the bacteria generally associated with tooth decay. Research demonstrated that an enzyme produced by the bacteria, termed GtfB, can bind to Candida. When sugar is present, a sticky polymeric matrix forms on its cell surface, enabling the fungus to bind to teeth and associate with bacterial counterparts. Together, these organisms work in concert to increase the severity of tooth decay in a rodent model.

Researchers wanted to see whether a two-pronged approach might break apart the synergistic association and effectively treat the biofilm. They came up with fluconazole, which is used as an antifungal, and povidone iodide, which is an antiseptic agent with antibacterial properties. Used alone to treat biofilms grown on a tooth-like material, the drugs had only moderate effects, confirming that monotherapy doesn’t work very well against polymicrobial biofilms. But in combination, the results were much more impressive — the fungal infection was completely eradicated, both in the lab-grown biofilms and in those formed in vivo using an animal model.

Researchers hope their findings lead to new strategies for treating bacterial-fungal infections associated with early childhood caries and possibly other polymicrobial diseases and are making use of nanotechnology to develop approaches that can precisely target the matrix and both the fungal and bacterial components of the oral biofilm.

Learn more about this study in the ISME Journal (2018); doi:10.1038/s41396-018-0113-1.

Fluoride Varnish Prevents Caries in Primary Dentition

Research published by the German Institute for Quality and Efficiency in Health Care (IQWiG) in April 2018 found that caries in primary teeth were less common after application of fluoride varnish than without it.

The study asked the question “Does the application of fluoride varnish to the primary dentition have advantages in comparison with standard care without specific fluoride application?” and included children aged 6 and under with or without caries of their primary teeth. On average, about 14 percent of all 3-year-old children in Germany have caries in the primary dentition, according to the IQWiG.

Researchers extracted results from 15 randomized controlled trials, in which a total of 5,002 children were treated with fluoride varnish and 4,705 children received no such treatment. Further measures for caries prevention in addition to the application of fluoride varnish were offered. These measures included training on oral hygiene, instructions on the correct toothbrushing technique or provision of toothbrushes and fluoridated toothpaste. Along with caries, side effects of fluoride varnish were also investigated and studied in most cases. The follow-up observation period was mostly two years and in some cases up to three years.

Caries of primary teeth was found to be less common after application of fluoride varnish than without it. According to the study, this treatment could completely prevent caries in about every 10th child and would at least reduce progression of caries in other children. Learn more about the IQWiG at iqwig.de.
Cellular Messengers Communicate With Bacteria in the Mouth

A new UCLA-led study provides clear evidence that cellular messengers in saliva may be able to regulate the growth of oral bacteria responsible for diseases, such as periodontitis and meningitis. The study’s findings, which suggest that a body’s cellular messengers play an important role in managing the amount of good and bad bacteria in the mouth, appeared in the May issue of the Journal for Dental Research.

Researchers asked the question of whether our RNA — the cellular messengers — can communicate with harmful bacteria in the mouth. RNA acts as a messenger that transports DNA’s instructions to other parts of the cell. Small regulatory noncoding RNAs, known as sRNAs, regulate genes. A new class of sRNAs has also been discovered called tsRNA, which is transfer RNA-derived small RNA and found in human body fluids, including blood, tears and saliva.

The research team began by analyzing salivary sRNAs and found many of them belong to tsRNA with their sequences matching the partial transfer RNA sequences of several Gram-negative oral bacteria, which have a highly toxic outer layer that can cause periodontal disease. These salivary tsRNAs could potentially affect bacterial tRNA, a type of RNA molecule that helps decode a messenger RNA sequence into a protein and is required for bacterial growth. The Gram-negative bacterium used in the study to test this hypothesis was Fusobacterium nucleatum (F. nucleatum), the bacteria responsible for periodontitis.

The team showed that host cells respond to the presence of F. nucleatum by releasing specific tsRNA with sequence matching to tRNA of F. nucleatum. Furthermore, these released tsRNAs can inhibit the growth of F. nucleatum, but they have no effect on the growth of Gram-positive oral bacteria, such as Streptococcus mitis, a bacterium that responds to antibiotics.

Read more of this study in the Journal for Dental Research (2018); doi.org/10.1177/0022034518770605.
Drug-Filled 3D Printed Dentures Could Fight Infections

To better treat fungal infections, called denture-related stomatitis, suffered by denture-wearers, University at Buffalo researchers have turned to 3D printers to build dentures filled with microscopic capsules that periodically release the antifungal medication Amphotericin B.

Research found that the drug-filled dentures can reduce fungal growth, according to a study recently published in *Materials Today Communications*. Unlike current treatment options, the new development can also help prevent infection while the dentures are in use.

The technology allows clinicians to rapidly create customized dentures chairside, which is a vast improvement over conventional manufacturing that can vary from a few days to weeks, said Praveen Arany, DDS, PhD, the study’s senior author. UB researchers printed their dentures with acrylamide, the current go-to material for denture fabrication. The study sought to determine if these dentures maintained the strength of conventional dentures and if the material could effectively release antifungal medication.

To test the strength of the teeth, researchers used a flexural strength-testing machine to bend the dentures and discover their breaking points. A conventional lab-fabricated denture was used as a control. Although the flexural strength of the 3D printed dentures was 35 percent less than that of the conventional pair, the printed teeth never fractured.

To examine the release of medication in the printed dentures, the team filled the antifungal agent into biodegradable, permeable microspheres. The microspheres protect the drug during the heat-printing process and allow the release of medication as they gradually degrade.

The investigation involved the development of an innovative form of acrylamide designed to carry antifungal payloads and a novel syringe pump system to combine the dental polymer and microspheres during the printing process. The dentures were tested with one, five and 10 layers of material to learn if additional layers would allow the dentures to hold more medication. The researchers found that the sets with five and 10 layers were impermeable and were not effective at dispensing the medication. Release was not hindered in the more porous single layer, and fungal growth was successfully reduced.

Learn more about this study in *Materials Today Communications* (2018); doi.org/10.1016/j.mtcomm.2018.02.016.

Doctors Could Detect Neglect With More Training

New research conducted in the U.K. now suggests that family doctors or general practitioners (GPs) lack the awareness and training to identify dental neglect in children, and therefore could miss the opportunity to share potential cases of wider abuse or neglect to other health and welfare professionals. The study was published in *The British Dental Journal*.

Researchers estimate that one in 10 children have been or are being abused or neglected, and that one to two children in the U.K. die each week as a result of neglect or abuse. Although there is no single standard for identifying neglect, research shows that dental neglect is an important marker for wider neglect.

In this study, researchers sent a structured survey to all National Health Service (NHS) GPs on the Isle of Wight in the U.K. Of those 106 GPs, 52 percent responded to the survey, which examined how aware GPs are of the role dental health plays in child neglect. The survey also assessed the level of training GPs received in dental pathology.

The results showed that the majority of GPs had never liaised with a dental colleague about a pediatric patient, and 96 percent had never received any formal dental training and some did not perceive dental health to be important. None of the respondents worked in a clinic where the dental registration of a child was noted in medical records, and only five GPs mentioned a link between a child not being registered with a dentist and child neglect.

“This study highlights that GPs lack training in identifying dental pathology and are unaware that dental neglect could be a marker for potential wider child neglect,” said Sascha Colgan, MRCGP, MSc, consultant GP and visiting researcher at the University of Southampton in the U.K.

Read more of this study in *The British Dental Journal* (2018); doi: 10.1038/sj.bdj.2018.349.
Dental Student Research: Pediatric Oral Health and Vulnerable Populations

Francisco Ramos-Gomez, DDS, MS, MPH
I strongly believe that the future of dentistry lies in the ability to tackle our current challenges in health care to help create meaningful systems changes and create a cadre of progressive dental providers who have adapted to those challenges. Conclusions drawn from evidence-based dentistry will help us create and implement innovative health policies and help shape the practices of future dentists. Dentistry needs to create disruptive systems changes that allow for an infrastructure conducive for improvement in children’s oral and general health by focusing on prevention.

Systems changes will need to address the three main levels of comprehensive health care: the child/family level, the community level and the societal level. For example, at the child/family level we need further research into better incorporating incentive-based behavior modification techniques into practice. At the community level, we need to continue to address issues of access to care for our most vulnerable and underserved populations through incorporation of oral health into primary care and interprofessional collaborative practice. And at the societal level, we need to devise and implement health policies that allow for provider reimbursement reforms that will better support preventive quality patient-centered care.

As young researchers continue to discover newer and better methods to address oral diseases, we must continuously translate those methods into meaningful policies and tools that will support communities at the greatest risk of developing oral diseases. Conquering, for instance, early childhood caries, which still remains the single most common chronic disease among children, will require multifaceted strategies and interprofessional cooperation. In this issue, we salute our students/residents, their faculty mentors and the importance of research for improved patient care.
Effects of an Educational and Outreach Intervention on Community Oral Health Workers

Gabriela Salcedo, DDS; Francisco Ramos-Gomez, DDS, MS, MPH; Hamida Askaryar, RDH, MPH; Chi-Hong Tseng, PhD; and Donna Kritz-Silverstein, PhD

ABSTRACT This pilot study examines caregivers’ knowledge, attitudes and practices regarding their child’s oral health changes after an educational intervention. Participants were 10 caregivers of children (aged 0–5). Caregivers were trained by dental students and a pediatric dental resident and were assessed prior to the start of the training course and six weeks after its completion. The project shows significant improvements in caregivers’ knowledge and practices about children’s oral health with a targeted and culturally competent intervention.

Despite advances in community prevention and health care reform, disparities in oral health, dental care and access to oral health care services continue to exist. Dental caries is still the No. 1 chronic infectious, yet preventable, disease in children, and we continue to discover strong links between oral health and systemic health. A recent study by Monsarrat et al. reported more than 57 systemic conditions linked to periodontal disease. Children of low socioeconomic and disadvantaged backgrounds are at higher risk for developing early childhood caries (ECC). Significant oral disease persists within the United States and California. The oral health of California’s children is substantially worse than national objectives. Of 25 states surveyed, California ranked second lowest in children’s dental health. Dental caries rates in Los Angeles County are significant and exceed statewide averages. Of children surveyed in the Los Angeles Unified School District, 56 percent had experienced dental caries by the time they reached kindergarten. With a large proportion of the local pediatric population at extreme risk for dental disease, it is imperative that dental professionals partner with caregivers to provide early and regular preventive oral health services.

The Latino population is the largest and fastest growing minority group in California and particularly in Los Angeles County. Overall, 38 percent of the California population is Latino and of these, 14 million people (83 percent) are of Mexican origin. In Los Angeles County, 46 percent of the population identifies as Hispanic or Latino ethnicity based on the 2010 U.S. Census. According to the Centers for Disease Control and Prevention, between 2001 and 2004 Hispanic children of Mexican origin aged 2–5 had a significantly higher rate of untreated cavities than white, non-Hispanic children (29.2 percent versus 14.5 percent). While not the only

AUTHORS

Gabriela Salcedo, DDS, was a pediatric dental resident at the University of California, Los Angeles, School of Dentistry from 2015–2017 and is now a pediatric dentist in private practice in Los Angeles County. Conflict of Interest Disclosure: None reported.

Francisco Ramos-Gomez, DDS, MS, MPH, is a professor at the University of California, Los Angeles, section of pediatric dentistry and director of the UCLA Center for Children’s Oral Health (UCCOH). Conflict of Interest Disclosure: None reported.

Hamida Askaryar, RDH, MPH, is a registered dental hygienist and the program manager for the HRSA-funded project “Strategic Partnership for Interprofessional Collaborative Education in Pediatric Dentistry” (SPICE-PD: www.uclachatpd.org). Conflict of Interest Disclosure: None reported.

Chi-Hong Tseng, PhD, is an adjunct professor at the department of medicine at the University of California, Los Angeles. He is a biostatistician and his research interests include clinical trials, survival analysis and missing data problems. Conflict of Interest Disclosure: None reported.

Donna Kritz-Silverstein, PhD, is a professor in the department of family medicine and public health at the University of California, San Diego. She teaches classes in research design, data analysis and scientific writing. Conflict of Interest Disclosure: None reported.
step in prevention, appropriate oral health education is a critical and important factor in preventing ECC for this population.

Community health workers (CHWs) provide a range of services and play a number of roles. They assist individuals and communities in adopting healthy lifestyle behaviors. They conduct outreach within marginalized communities to implement programs that promote, maintain and improve individual and community health. They provide information on available resources, offer social support and informal counseling and help coordinate care across the health and social service sectors. CHWs can help reduce the burden of chronic diseases. They are trusted individuals who work in community settings and serve as connectors between health care consumers and providers to promote health among groups that have traditionally lacked access to care.9,10 Also known as promotoras de salud (promoters of health), they have been used in various chronic disease management programs (i.e., colorectal cancer screenings, diabetes prevention, etc.) and are effective in improving health outcomes and reducing social disparities in health.11,12

Knowledge, attitudes and practices regarding children’s oral health vary among caregivers. Thus, it is important for them to be properly educated with the appropriate knowledge and skills to promote health. The purpose of this pilot study was to train caregivers to become community oral health workers (COHWs) and to investigate changes in the COHWs’ knowledge, attitudes and practices regarding their child’s oral health after the training. We hypothesized that there would be significant increases in knowledge and positive changes in practices and attitudes of the caregivers after training compared to before training.

Methods

Participants and Community Partners

This project was conducted with two UCLA community partners, Westside Children’s Center and Venice Family Clinic. Both are located in urban sections of Los Angeles County. These community partners are well-established community centers that continuously recruit new participants/patients through flyers, posters, emails, direct approach, fairs and other types of announcements. These community centers were the main sites used for recruiting for focus group participants as well as for the 20 caregivers (10 who became COHWs and 10 in the control group).

Westside Children’s Center is located in Culver City, Calif. It provides thousands of at-risk children and their families with critical, high-quality early education programs, family-strengthening interventions for families at risk of abusing or neglecting their children, foster care and adoption services and a range of vital integrated services, such as disabilities screenings/advocacy, nutrition, parenting classes, counseling, bilingual domestic violence classes, dental and vision screenings and pediatric health consultations.

Venice Family Clinic, located in Santa Monica, Calif., provides free and affordable health care for low-income, uninsured and homeless families and individuals. It provides a variety of health, dental and family services and is the nation’s first health, wellness and integrative medicine program offered at a community clinic. A wide range of evidence-based integrated services that focus on the whole person and the whole family are provided by the clinic. UCLA residents and students rotating through Venice Family Clinic’s Simms/Mann Health and Wellness Center learn an integrative approach to medical care and dental care. The Venice Family Clinic also includes an on-site, home-based Early Head Start program.

Procedure

The project lasted 12 months and was completed in three phases. All participants gave written informed consent prior to participation.

Phase One: Team Selection, Focus Group and Recruitment

Team Selection: Within the first two months of the project, 10 dental students and one first-year pediatric dental resident were selected to participate in this project. Together they conducted a literature review to start designing the oral health curriculum for the COHWs.

Focus Group: In the third month of the project, a focus group made up of community members was conducted with the aim of designing an oral health curriculum specifically tailored to the needs of the community. Bilingual recruitment flyers for the focus group were posted at the two community partner sites. Various caregivers from these sites were directly approached in the waiting rooms and invited by the project coordinator on different days to participate in the focus group. The project team accepted all eligible (any caregiver with children...
aged 0–5) caregivers to participate in the focus group (no selection needed). The 90-minute focus group conducted at Westside Children’s Center consisted of 12 female caregivers and was led by the pediatric dental resident who speaks English and Spanish. The majority of the caregivers were bilingual (English and Spanish) Latinas with a high school education and most were married. The focus group was guided by open-ended questions on toothbrushing habits, toothpaste usage, fluoridated water usage, dental visits, dental insurance and barriers to dental care. Focus group questionnaires and evaluation forms were entered and cleaned and descriptive statistics were calculated in Microsoft Excel. Notes and open-ended questions were examined for themes using content analysis. The focus group interview was not recorded.

**Recruitment:** Potential COHWs were recruited through flyers and in person with help from the project coordinator at both community sites as well as at a local Women, Children and Infants (WIC) partner site in Santa Monica. Approximately 14 female caregivers were interested. After initial contact, the caregivers were provided more details about the project and then 10 were identified as the most suitable to participate based on availability and interest. An additional group of 10 female caregivers was randomly selected from the same sites also based on availability and interest in being part of the control group.

**Phase 2: Oral Health Curriculum and Training**

In months four to six, through a combination of classroom lecture and discussion, the curriculum introduced COHWs to evidence-based, oral-systemic health and knowledge about the nature, prevalence and consequences of oral manifestations of chronic oral diseases across the lifespan with an emphasis on children. The entire curriculum was kept at a sixth-grade literacy level and all materials were translated into Spanish. The dental students and the pediatric dental resident presented the courses simultaneously in English and Spanish. Child care and light refreshments were provided at all training meetings. COHWs learned their role in preventing oral disease in the community, addressing frequently encountered oral problems and promoting oral health among their peer caregivers. Regularly scheduled reflection sessions allowed the COHWs and the project team to exchange ideas and thoughts. The COHWs were required to review a list of required course materials prior to the start of the training. These included selected online sections of the Smiles for Life curriculum, a Colgate webinar on “The Art of Perinatal and Infant Oral Health” by Francisco Ramos-Gomez, DDS, MS, MPH, (available in Spanish) and links to the UCLA Infant Oral Care Clinic documents. The learning objectives below were accomplished through 13 workshops of approximately 90 minutes each.

Total training time was approximately 21 hours of which eight hours were the main didactic sessions (italicized list), with the remaining for mentoring.

1. Introduction to COHW project
2. Prenatal and transmission
3. Early childhood caries
4. Toothbrushing and flossing
5. Nutrition
6. Bottle use and breastfeeding
7. Teething and pacifiers
8. Healthy versus unhealthy teeth
9. The dental visit
10. Health literacy and parental advocacy
11. Visit to UCLA and lecture on public health dentistry
12. Becoming the trainer
13. Careers in dentistry

Through hands-on clinical training, COHWs learned to assess a child’s oral health, identified basic healthy versus abnormal oral conditions and learned to apply the concepts of a caries risk assessment. COHWs performed oral health screenings on their own children and children of their peers. Most clinical learning was accomplished through pictures, videos and teeth models. The hands-on learning objectives were:

- Review basic oral anatomy and characteristics of healthy versus unhealthy teeth (using many pictures, tooth models and videos).
- Understand differences between normal and abnormal findings (how to look for cavities).
- Develop awareness of particular challenges involved in dealing with special needs children such as children with autism (e.g., how to brush the teeth of an uncooperative child and where to seek dental help for special needs children).
- Perform a regular and thorough basic oral screening of infants and children by their own parents.

The control group did not receive the oral health training but were given a handout on children’s oral health.
Phase 3: Conduct Workshops for the Community and Evaluation

In months seven to 11, the trained COHWs in teams of two conducted five community workshops (with a combined attendance of 55 caregivers from the community). Control group caregivers only completed the pretest, received a brochure about children’s oral health, were asked to read it at their own leisure and then six weeks later completed the posttest. Control group caregivers did not conduct any community trainings.

Pretests and posttests were used to assess changes in knowledge, practices and attitudes regarding children’s oral health among the COHWs and the control group. Answer choices ranged from correct/incorrect to strongly agree/strongly disagree and some write-in answers. The pretest was completed by the COHWs and the control group prior to the first training meeting. Posttests were completed six weeks later (after the training) by participants in the intervention and the control group.

Statistical Analysis: Data was entered into Excel and analyzed with SPSS. Summary statistics were generated to characterize the study population and comparisons of pretest and posttest results between the COHW and control groups were performed with paired t-tests and McNemar tests.

Results: The focus group centered on children’s oral health issues and the open-ended questions revealed that:
- All participants reported drinking bottled water.
- Most participants reported not taking their child to the dentist because of their child’s young age; others mentioned not taking their child often and currently searching for a dentist.
- One participant mentioned that they do not have dental insurance and the high cost of dental care affects their finances.

The findings from the focus group were used to modify the curriculum content and delivery style and suggested that the content needed to include:
- The importance of drinking and cooking with fluoridated tap water.
- The appropriate age for first dental visits for children and the importance of dental visits.
- Connections with available low-cost and free dental care resources in the surrounding communities.

All COHWs and the control group participants were women, and most were Latinas and bilingual in English and Spanish. The majority were between 20 and 30 years of age and all had kids aged 0–5. Most were married and homemakers. Unfortunately, one COHW failed to complete the pretest and posttest, therefore data on only nine COHWs are available. But 10 COHWs participated in the entire project (TABLE 1).

Pretest and posttest questionnaires were used to collect data from the nine COHWs and 10 control group participants. The questionnaire contained 27 items. Nineteen items were related to oral health education.

### TABLE 1
Demographic Characteristics of Women in the COHW and Control Groups

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N=9)</th>
<th>Control (N=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20–29</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>30–49</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>50+</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Black</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Multiracial</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Missing</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Non-Latino/non-Hispanic</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Profession</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homemaker</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Full-time worker</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Part-time worker</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Nonmarried</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### TABLE 2
Pre- vs. Postcomparisons of Attitudes, Knowledge and Practices Within the Intervention and Within the Control Groups

<table>
<thead>
<tr>
<th>Points possible</th>
<th>Intervention (N=9)</th>
<th>Control (N=10)</th>
<th>P-Value 1</th>
<th>Intervention (N=9)</th>
<th>Control (N=10)</th>
<th>P-Value 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre mean (SD)</td>
<td>Post mean (SD)</td>
<td>Pre mean (SD)</td>
<td>Post mean (SD)</td>
<td>P-Value 1</td>
<td>Pre mean (SD)</td>
<td>Post mean (SD)</td>
</tr>
<tr>
<td>Attitude 5</td>
<td>15</td>
<td>13.7</td>
<td>14.8</td>
<td>0.08</td>
<td>14.4</td>
<td>14.1</td>
</tr>
<tr>
<td>Knowledge 6</td>
<td>19</td>
<td>11.3</td>
<td>17.8</td>
<td>0.0005</td>
<td>11.1</td>
<td>13.5</td>
</tr>
<tr>
<td>Practice 7</td>
<td>4</td>
<td>3.4</td>
<td>3.9</td>
<td>0.04</td>
<td>3.4</td>
<td>3.8</td>
</tr>
</tbody>
</table>

1 P-Value from paired t-test.
2 Note that strongly agree=5, agree=4, neither agree or disagree=3, disagree=2 and strongly disagree=1.
3 Knowledge and practice scores based on number of correct responses.

### TABLE 3
Analysis of Differences Between Intervention and Control Group Test Scores

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N=9)</th>
<th>Control (N=10)</th>
<th>Difference</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes (mean, sd)</td>
<td>1.1 (1.7)</td>
<td>-0.3 (1.3)</td>
<td>1.4 (1.5)</td>
<td>0.06</td>
</tr>
<tr>
<td>Knowledge (mean, sd)</td>
<td>6.4 (3.4)</td>
<td>2.4 (3.2)</td>
<td>4.0 (3.3)</td>
<td>0.02</td>
</tr>
<tr>
<td>Practice</td>
<td>0.44 (0.53)</td>
<td>0.40 (0.52)</td>
<td>0.04 (0.52)</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Summary statistic represents change between pre to post (i.e., post-pre).
knowledge, four addressed the COHWs’ attitudes toward children’s oral health and four were related to oral health practices. TABLE 2 summarizes the pre-versus postcomparisons of attitudes, knowledge and practices within the COHWs and separately within the controls. There was a significant increase in knowledge (p=0.0005) and practices (p=0.04) and a borderline change in attitudes (p=0.08) among the COHWs. The control group showed similar increases in knowledge (p=0.04) and practices (p=0.04), but the increase in knowledge for the COHWs group was comparatively larger.

TABLE 3 shows the results of comparisons of the differences between the scores of the intervention and control group between pretest and posttest. As shown, there was a significantly greater change in scores from pretest to posttest for knowledge in the COHW group than for the control group (6.4 versus 2.4, p=0.02).

FIGURE 1 shows the mean attitude scores on the pretest and posttest for the COHWs. Differences of borderline significance on two attitude items are shown.

FIGURE 2 shows that although there was no significance in individual practice items, positive increases in oral health practices after as compared to before intervention were found.

TABLE 4 shows comparisons of the rates of correct responses to the 19 knowledge questions for the COHWs; two individual items were significant and three were of borderline significance postintervention.

Qualitative Analysis
Participants in this project showed that their children’s oral health is a high priority for low-income bilingual (English-Spanish) parents. The attendance was excellent at all 13 training and preparation workshops for the 10 COHWs, possibly due to the fact that each COHW received $2,000 for her participation. The curriculum was perceived as highly acceptable and the COHWs genuinely seemed to enjoy their participation and their interaction with the dental students and resident. They particularly enjoyed their visits to the UCLA School of Dentistry and being able to receive a dental school tour. Some of the comments from the COHWs were, “I did not know that you could get cavities from another person,” “I thought it was really important on how to detect the first signs of cavities (white spots),” and “I did not know that it was important for us to keep our health so that our kids can have good oral health.”

All 10 COHWs rated the initial four training workshops as extremely useful. In a postproject survey, the 10 dental students and the one pediatric dental resident stated that they felt the COHW training curriculum was either effective or very effective. All 11 also rated it as very important to train COHWs. One commented that, “Yes, I think they (COHWs) would be a great bridge of communication between the community of patients and the dentists. The patients will more likely have a connection with the COHW than with the dentists, making it more possible for the patients to receive the information and be treated in the future.” Another commented that, “Yes, I believe they (COHWs) can help bridge the cultural barrier and skepticism between some populations and the provider; they can help the provider be more aware of some cultures they are providing for and also allow for the patient to have a resource that may have more time to spend explaining and coaching through basic instruction.” Nine stated that this project was useful or very useful for their own career development, and 10 out of 11 dental students and the resident stated that they would consider hiring a COHW in their future dental practices for patient education and community outreach.
Discussion

The results of this study contribute to the existing body of research on children’s oral health, particularly among Hispanic families. Studies have reported that CHWs (promotoras) can be effective in community health education, outreach and screening especially for chronic diseases, better medication adherence, increased patient involvement and improvements in overall community health.11 One study found an annual cost savings in using CHWs of about $2,000 per Medicaid patient with diabetes.17 Promotoras speak the language of their communities, can address cultural misperceptions and fill the gap where health education and health promotion are scarce. In a study by Lujan et al. to determine the effectiveness of an intervention led by promotoras on various diabetes factors among Mexican Americans, it was found that this intervention resulted in decreased hemoglobin A1C levels and other positive outcomes.12 Furthermore, a 2010 Institute of Medicine report recommended policy and system changes to incorporate CHWs into local hypertension control programs.18 Tiwari et al. recently demonstrated that maternal oral health behaviors are a significant factor associated with early childhood caries in urban Latino children, therefore our curriculum focused on educating caregivers about the transmissibility of dental caries and establishing a family dental home to encourage all family members to receive care.19

Increasing public awareness about the prevention of dental caries is important especially among underserved and minority populations that have less access to care, less dental insurance coverage and higher rates of risk. Because caregivers are their children’s first teachers and because most children already experience dental caries by the time they enter kindergarten,6 it is important to educate caregivers of infants and toddlers about dental caries prevention to help reduce prevalence rates of dental caries. As with many other chronic infectious diseases, prevention is the key as dental treatment is often costly, not easily accessible and particularly risky and difficult for very young children due to behavior issues (uncooperativeness) and the possible need for pharmacological sedation.

This study showed that after the intervention, there was a significant increase in total knowledge as well as in practices but the increase in knowledge was larger in the intervention group. 

Table 4: Rates of Correct Knowledge Responses Pre- vs. Postintervention in COHWs (N=9)

<table>
<thead>
<tr>
<th>Knowledge Questions</th>
<th>Pre (%)</th>
<th>Post (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poor oral health has been linked to: diabetes and long-term health problems</td>
<td>67</td>
<td>78</td>
<td>1</td>
</tr>
<tr>
<td>2. The most common chronic childhood disease is: dental caries</td>
<td>67</td>
<td>100</td>
<td>0.25</td>
</tr>
<tr>
<td>3. What causes tooth decay?</td>
<td>33</td>
<td>99</td>
<td>0.06</td>
</tr>
<tr>
<td>4. Children can brush by themselves at what age?</td>
<td>100</td>
<td>99</td>
<td>N/A</td>
</tr>
<tr>
<td>5. Poor oral health of children has been related to: poor performance in school and social relationships</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>6. When should toothbrushes be replaced?</td>
<td>78</td>
<td>100</td>
<td>0.5</td>
</tr>
<tr>
<td>7. Which healthy snacks does the dentist recommend?</td>
<td>22</td>
<td>100</td>
<td>0.02</td>
</tr>
<tr>
<td>8. Which liquids are OK to put in your child’s bottle that they can sleep with?</td>
<td>67</td>
<td>89</td>
<td>0.63</td>
</tr>
<tr>
<td>9. Caregivers can transfer bacteria/germs that cause dental caries by:</td>
<td>78</td>
<td>78</td>
<td>1</td>
</tr>
<tr>
<td>sharing utensils</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. At what age can a child start using toothpaste with fluoride?</td>
<td>33</td>
<td>100</td>
<td>0.03</td>
</tr>
<tr>
<td>11. Dental plaque is: food and bacteria</td>
<td>44</td>
<td>100</td>
<td>0.07</td>
</tr>
<tr>
<td>12. Tooth decay can be prevented with: fluoride and brushing and flossing</td>
<td>44</td>
<td>78</td>
<td>0.25</td>
</tr>
<tr>
<td>13. How long should a child brush their teeth for?</td>
<td>56</td>
<td>100</td>
<td>0.13</td>
</tr>
<tr>
<td>14. Parents should: keep their own teeth and gums healthy</td>
<td>56</td>
<td>100</td>
<td>0.13</td>
</tr>
<tr>
<td>15. When my child’s gums are bleeding: pay attention to the gums and ask the dentist</td>
<td>100</td>
<td>89</td>
<td>1</td>
</tr>
<tr>
<td>16. Tap water that has fluoride is a good source of fluoride</td>
<td>55</td>
<td>100</td>
<td>0.13</td>
</tr>
<tr>
<td>17. It is OK to give my baby or toddlers sweetened beverages in a sippy cup/bottle: only with meals</td>
<td>56</td>
<td>89</td>
<td>0.22</td>
</tr>
<tr>
<td>18. Taking children for regular dental visits is necessary to maintain good dental health</td>
<td>100</td>
<td>89</td>
<td>1</td>
</tr>
<tr>
<td>19. My child’s first dental visit should be: when their first tooth erupts or by age 1</td>
<td>55</td>
<td>100</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Conclusion

As demonstrated by the success of this pilot project, we found that caregivers’ knowledge and practices about children’s oral health can be increased or improved with a targeted and culturally competent intervention consisting of at least an eight-hour training course.
Findings from the focus group and the subsequent revisions to the curriculum likely aided in the high acceptability of the curriculum by the COHWs. The curriculum is publicly available at the UCLA Center for Children’s Oral Health website,20 uccoh.org/research.html. Oral health attitudes may take longer to change or require different types of interventions. The small number of participants and the fact that caregivers may have reported that they engage in socially desirable practices rather than their actual behaviors are limitations of this study. Therefore, project evaluators recommend that a different approach and different types of questions be devised to better capture and understand the caregivers’ true attitudes and practices in regards to children’s oral health. Future research should include more qualitative research methodology such as a nominal group process or observations.

Future studies should include a larger participant size, longer follow-up time (six months to one year) to examine retention of knowledge and stability in change in practices and attitudes among the caregivers and evaluation of the oral health workshops given by the COHWs, including a follow-up of the attendees of those workshops. Finally, future research should also assess and follow-up the clinical outcomes of the children of the caregivers, which was beyond the scope of this project. Some of the recommendations from the COHWs were to include more information on how to help adults who had mental health issues with their oral health, the need for more time/opportunities to practice their newly obtained presentation skills before going to the community and more training in public speaking.

The dental students and the resident noted that the majority of the COHWs were willing to learn more about oral health and that their children's oral health was very important to them. Important topics to include for future projects are the prevention of early childhood caries, including the significance of the daily consumption of fluoridated tap water, how to detect early forms of caries and the early establishment of dental homes for all family members. One final positive outcome of this project was that several of the COHWs showed interest in pursuing careers in dentistry.

ACKNOWLEDGMENT
This one-year community project was supported by funds ($40,000) from the California Office of Statewide Health Planning and Development (grant No. 15-8148). This participatory community research project was approved by UCLA IRB (No. 16-00755). Each COHW received $2,000 and each dental student received a $1,200 educational stipend for their participation.

REFERENCES

THE CORRESPONDING AUTHOR, Hamida Askaryar, RDH, MPH, can be reached at haskaryar@dentistry.ucla.edu.
Better cyber protection. More tools to respond.

TDIC’s new Cyber Suite Liability has you covered.

We’ve upgraded our data compromise coverage to comprehensive Cyber Suite Liability protection to help you respond to a full range of cyber incidents, including:

- Data compromise response expense
- Computer attack and cyber extortion
- Liability coverage for data compromise, including regulatory proceedings, network security and electronic media

This product is available only to TDIC Commercial Property policyholders who have Business Owner’s coverage.

Contact a TDIC representative to learn more, get a quote and apply for coverage.

Coverage specifically underwritten by The Dentists Insurance Company includes Professional Liability, Commercial Property and Employment Practices Liability. TDIC also underwrites Workers’ Compensation in California. TDIC Insurance Solutions offers other coverages as an agent or broker by agreement with our partner insurance carriers. Available coverage limits and discounts vary by carrier and are subject to carrier underwriting. Special Features and Optional Riders offered in policies may vary by carrier. The information provided here is an overview of the referenced product and is not intended to be a complete description of all terms, conditions and exclusions.

Protecting dentists. It’s all we do.
Child Misbehavior in the Dental Setting Is Generally Assumed To Be Fear

Imran Ahmed, BS; Shanelle Shahery, BA; and Clarice S. Law, DMD, MS

ABSTRACT

There are a number of reasons for a child to misbehave in the dental setting. The aim of this study was to compare provider ratings of fear and defiance to standardized assessments of children’s fear and defiance. Results suggest that misbehavior by defiant children in the dental setting is frequently thought to be related to fear. Providers may not be able to accurately distinguish between defiance and fear.

T

here are a number of reasons why a child might not be compliant during a dental appointment. Pain and memories of previous painful experiences must always be taken into consideration and regarded as reasonable justifications for a child to react.1,2 However, when a child misbehaves in the dental chair in the absence of a painful stimulus, a common assumption is that the child is fearful. This is true for about 5 to 20 percent of the children and adolescents visiting the dental office and can result in difficulty completing treatment or can prevent treatment entirely while also leading to an increase in occupational stressors among dental staff.3–5

In considering the influence of dental fear in children, concerns arise more frequently during restorative procedures involving injections, but can also present in simpler procedures such as exams.7 To prevent and manage fear in children, various basic behavior guidance techniques are recommended by the American Academy of Pediatric Dentistry (AAPD). Some of these strategies include tell-show-do, distraction, parental presence/absence and nitrous oxide/oxygen inhalation.2

Although fear is usually the first consideration for children who misbehave in the dental setting, another explanation may be that the child is “strong-willed” or “defiant.” Forehand and Long defined the strong-willed child as one who is more likely to be “noncompliant, stubborn, argumentative and defiant.”8 Similar to children with dental fear, children who are defiant in the dental setting can present challenges to treatment by refusing to comply with requests to be examined or treated. Ultimately, this may prevent treatment completion and reduce the quality of care provided.9

AUTHORS

Imran Ahmed, BS, is a doctor of dental surgery candidate at the University of California, Los Angeles, School of Dentistry. Mr. Ahmed studied neurobiology at the University of California, Irvine.

Conflict of Interest Disclosure: None reported.

Shanelle Shahery, BA, is a doctor of dental surgery candidate at the University of California, Los Angeles, School of Dentistry. Ms. Shahery studied economics at the University of California, Los Angeles.

Conflict of Interest Disclosure: None reported.

Clarice S. Law, DMD, MS, is an associate clinical professor, sections of pediatric dentistry and orthodontics, at the University of California, Los Angeles, School of Dentistry. She is trained in both pediatric dentistry and orthodontics.

Conflict of Interest Disclosure: None reported.

Clarice S. Law, DMD, MS, is an associate clinical professor, sections of pediatric dentistry and orthodontics, at the University of California, Los Angeles, School of Dentistry. She is trained in both pediatric dentistry and orthodontics.

Conflict of Interest Disclosure: None reported.

Clarice S. Law, DMD, MS, is an associate clinical professor, sections of pediatric dentistry and orthodontics, at the University of California, Los Angeles, School of Dentistry. She is trained in both pediatric dentistry and orthodontics.

Conflict of Interest Disclosure: None reported.
While very few studies have examined the influence of defiance on behavior in the dental setting, much effort has been expended in addressing the issue of defiance in the home environment. Most studies focus on parenting strategies for children with oppositional defiant disorder (ODD), which can be classified as the extreme case of defiance. According to the Diagnostic and Statistical Manual of Mental Disorders, about 2 to 16 percent of children are diagnosed with ODD. Although there are no official recommendations for strong-willed or defiant children, AAPD guidelines list various behavior guidance techniques that may be effective. The recommendations include the techniques previously mentioned in the management of dental fear, in addition to others such as positive reinforcement, voice control, protective stabilization, sedation and general anesthesia.

It is important to differentiate between fear and defiance in the dental setting, as specific intervention strategies may be more effective in guiding defiant behaviors. Fearfulness in children and adolescents has been investigated using a number of different assessment tools, including the Fear Survey Schedule for Children-Revised (FSSC-R). The self-report scale includes ratings for stimuli and situations that may elicit fear in children. The FSSC-R has become regularly used within the scope of fear-related research, measuring both fears and fearfulness in children. Evidence suggests that this test is reliable for application in the clinical setting as well.

Defiance is somewhat more difficult to determine objectively. There are a number of diagnostic criteria and indicators of oppositional defiant disorder, which are usually based on observed behaviors. Many of these assessments are long with a substantial number of items. The Weekly Assessment of Childhood Behaviors-Negative (WACB-N) has been used by treatment centers employing parent-child interaction therapy to address oppositional defiant behaviors. This brief, nine-item assessment allows for the monitoring of negative behaviors that require management over the course of treatment.

Although it would be ideal to distinguish between fearful and defiant behaviors to determine the most effective behavior guidance strategies, the evidence base supporting this assessment process is weak. Very few studies describe the differences between fearful and defiant behaviors in the dental setting. The goal of this project was to determine whether providers can distinguish between fear and defiance. Thus, the aim of this study was to compare standardized assessments of children’s fear and defiance with provider ratings of fear and defiance by specifically demonstrating no difference in (1) the parents' FSSC-R scores and the providers' fear ratings and (2) the parents' WACB-N scores and the providers' defiance ratings.

**Methods**

This study was approved for use in human subjects by the UCLA Institutional Review Board (IRB#16-001647).

There were two subject populations in this study. The first group of subjects was made up of “parent subjects” consisting of pediatric dentistry residents at the UCLA School of Dentistry treating healthy children aged 3 to 8. The second group was made up of “parent subjects” consisting of the parents of children being treated by the provider subjects. Parent subjects were recruited among English-speaking parents of children presenting for appointments at the Children’s Dental Center at the UCLA School of Dentistry during the study period.

Before the dental appointment, parents consenting to participate completed a research instrument that included some demographic information, the FSSC-R and the WACB-N. Upon completion of the appointment, the provider subjects were given a questionnaire that included assignment of a Frankl behavior rating score where 1 represents definitely negative behavior and 4 represents definitely positive. Provider subjects were also asked to provide their rating of the child’s level of fear during the appointment (1 = no fear, 2 = mild fear, 3 = moderate fear, 4 = severe fear, 5 = possible anxiety disorder), as well as their rating of the child’s level of “willfulness or defiance” during the appointment (1 = no willfulness, 2 = mild willfulness, 3 = moderate willfulness, 4 = severe willfulness, 5 = possible defiance disorder). New patient examinations, recall examinations and restorative appointments were included in this study.

Data were initially gathered on printed copies of the research instruments/questionnaires. Data were stored electronically in the UCLA REDCap database, which is a resource of the UCLA Clinical and Translational Science Institute supported by NIH National Center for Advancing Translation Science (NCATS) through grant number UL1TR001881. Statistical analysis was conducted using the SPSS Statistics software (IBM, Armonk, N.Y.) package.
Results

Subjects

In the sample of provider subjects, a total of 12 pediatric dentistry residents — eight female and four male — agreed to participate in this study.

In the parent subject population, a total of 67 parents agreed to participate on behalf of their children. Mean age of patients was $6.2 \pm 1.8$ years; 53 percent were male and 47 percent were female. Within the patient group, 15 percent presented for a new patient exam, 62 percent for recall and 23 percent for restorative treatment.

Associations With WACB-N Scores

Children diagnosed with ODD generally score greater than 35 on the WACB-N. The mean WACB-N score reported by the parent subject population in this study was 16.8, standard deviation 6.2. None of the children in the sample had WACB-N scores in the range expected for children with ODD.

There was no correlation between the WACB-N score reported by parent subjects and the defiance rating reported by provider subjects (Table 1). Increases in the WACB-N score did not correlate...
with higher defiance ratings (FIGURE 1A). The highest reported WACB-N score was rated by the provider as 1 (no willfulness) on the defiance rating scale. The lowest reported Frankl behavior rating (1, definitely negative) was assessed by the provider to be 4 (severe willfulness) on the defiance rating scale.

In comparing the WACB-N score and fear rating, there was a statistically significant correlation of 0.379 (p < 0.01) using two-tailed Spearman’s rho (TABLE 1). Increases in the WACB-N score reported by parent subjects were associated with higher fear ratings by the provider subjects (FIGURE 1B). Interestingly, the highest reported WACB-N score was rated by the provider as a Frankl 4 (definitely positive) and a 3 (moderate fear) on the fear rating scale.

**Associations With FSSC-R Scores**
Children with diagnosed phobias generally score greater than 55 on the FSSC-R. The mean FSSC-R score reported by the parent subject population in this study was 39.4, standard deviation of 8.3.

There were three reported FSSC-R scores in the range considered phobic, but all three individuals received fear rating scores of 1–2 (no fear to mild fear) (FIGURE 1C). Defiance rating scores associated with the FSSC-R scores in the phobic range were 1 (no defiance) and Frankl scores of 4 (definitely positive) (FIGURE 1D). The only patient with a reported Frankl score of 1 (definitely negative) received the highest defiance rating of 4 (severe willfulness). However, there was no correlation between the FSSC-R score reported by parent subjects and either the defiance rating or fear rating reported by provider subjects (TABLE 1).

**Associations With Frankl Behavior Rating**
Of the 67 pediatric patients, 1.5 percent had a Frankl score of Frankl 1, 7.5 percent scored Frankl 2, 45 percent scored Frankl 3 and 46 percent scored Frankl 4. There was no correlation between the Frankl score and the WACB-N score or the FSSC-R score. However, the Frankl behavior rating was negatively correlated with the defiance- and fear-rating scores assigned by provider subjects. The correlations were significant at the p < 0.01 level using two-tailed Spearman’s rho (TABLE 2).

**Discussion**
The aim of this study was to compare objective assessments of children’s fear and defiance as determined by their parents with provider ratings of fear and defiance. The purpose was to determine the provider’s ability to accurately distinguish between fear and defiance as potential origins for misbehavior in the dental setting.

The correlation between the WACB-N score and fear rating was 0.379 (p < 0.01). The WACB-N was designed to measure the frequency of defiant behaviors for children in therapy for ODD. As no tool exists, to the authors’ knowledge, to classify the motivating factors for misbehavior in the dental setting, one aim of the present study was to introduce the WACB-N as a possible tool to identify children with defiant tendencies. The classic evidence base in behavioral pediatric dentistry suggests that dental providers primarily attribute misbehavior to fear. According to Freeman, the primary reason children are disruptive in the face of dental treatment is because they have been frightened by the treatment itself. Thus, misbehavior could be inappropriately attributed to fear when it is actually defiance. In the present study, UCLA pediatric dentistry residents showed a tendency for increased fear ratings for children whose parents’ assessments indicated increased defiant behaviors at home.

There was no correlation between the FSSC-R score reported by parent subjects and either defiance or fear ratings reported by provider subjects, suggesting that children with more general fears aren’t necessarily driven to exhibit misbehavior in the dental setting. The FSSC-R has been shown to have satisfactory reliability in assessing fears and fearfulness of youths. Studies demonstrate good internal consistency and test-retest ability for the FSSC-R. Thus, the FSSC-R should be considered to be a reliable assessment of general fear in contrast to the Child’s Fear Survey Schedule-Dental Subscale (CFSS-DS), whose value lies in screening specific aspects of dental fear. The CFSS-DS also demonstrates poor consistency within parent-child pairs when

*Correlation is significant at the 0.01 level (two-tailed Spearman’s rho).
previously assessing dental anxiety.\textsuperscript{15,16} The present study was dependent on the assumption that children who are generally fearful would be fearful in the dental setting as well, which may not be an appropriate association.

There was no correlation between the Frankl score and the WACB-N score or the FSSC-R score. This suggests that children with higher defiance or higher fear can show cooperative behavior in the dental setting. Alternatively, it may also suggest that children behave differently in the dental setting than they do in the home environment. However, the Frankl behavior rating was negatively correlated with the defiance and fear rating scores assigned by provider subjects. When misbehaviors were demonstrated, provider subjects indicated a high level of both defiance and fears, suggesting that they cannot accurately distinguish between the two possible motivations for misbehavior.

A limitation to this study was the sample population. The provider subject pool consisted of only 12 residents. However, the data do not account for the number of contributions from each individual resident. It is therefore possible that one resident may have contributed more data to the study than another, and thus unequal contributions could have potentially skewed the data. Future studies should account for variation in the residents’ scoring. The parent subject pool consisted of only 67 subjects with a mix of appointment types. Twenty-three percent of the children were being evaluated during a restorative appointment, which increases the likelihood that a child’s behavior may have been in reaction to painful stimulus. On the other hand, treatment duration and increased complexity of treatment needs may account for the child’s behavior during and after dental treatment.\textsuperscript{17}

A number of studies have considered how to manage different types of behaviors in the dental setting. For a fearful child, behavior guidance strategies, such as tell-show-do, parental presence/absence and nitrous oxide/oxygen inhalation, are recommended by AAPD.\textsuperscript{1} However, for a defiant child, it is important to first understand the origin of the uncooperative behavior. Asking parents how they manage the child at home and what types of behavior to expect can aid with the process.\textsuperscript{8}

Based on the results of the present study, providers may show a tendency to attribute misbehaviors to fear. Children assessed by parents to be higher in general fears don’t necessarily show a higher rate of misbehavior in the dental setting. Further studies are needed to provide more evidence for providers to be able to distinguish between the fearful and defiant child. In addition, further studies are also needed to determine the most effective behavior guidance techniques for fearful and defiant.

Conclusion

Misbehavior by defiant children in the dental setting is frequently thought to be related to fear. Providers may not be able to accurately distinguish between defiance and fear. Further studies must examine behaviors specific to defiance in order to more accurately determine the cause of misbehavior.\textsuperscript{9}

\textbf{Acknowledgment}

The authors acknowledge the efforts of Anna Chamberlain, DDS, MPH, and Nicole Johnson, DDS, in establishing the original study and the efforts of Carlynn Chappell, ViKhoi Duong, Kaitlin Fusco, Marcus Hoffner, Christina Kulyk, Deborah Lee, Chloe Meyer and Parul Shridhar in data gathering and data input.

\textbf{References}


\textbf{The Corresponding Author}, Clarice S. Law, DMD, MS, can be reached at claw@dentistry.ucla.edu.
SMART ANALYSTS.

Need support navigating the business side of dentistry? CDA’s experienced analysts can answer your questions about practice management, dental benefit plans, employment practices and regulatory compliance. These specialized experts have developed a full library of online resources, speak on timely topics at CDA Presents and provide one-on-one guidance by email and phone.

Michelle Corbo, PHR, PHRca
Michelle specializes in employment practices, including employee management, policy development and wage and hour compliance.

Lee Bentz
Lee specializes in practice management, including operational efficiencies, collections, patient protocols, and starting, growing and selling a practice.

Cindy Hartwell
Cindy specializes in consulting with practices on dental benefit plans, navigating the benefits system and advocating for providers.

Teresa Pichay, CHPC
Teresa specializes in regulatory compliance, including information verification, documentation strategies and referral to legal references.

Melanie Duval
As the director of Practice Support, Melanie leads the team of expert analysts and provides strategic direction for resources and initiatives.

Learn more about our analysts and find contact details at cda.org/practicesupport. Submit “Ask an Expert” questions online and check the Q&A archive, or call 800.232.7645 to be directed to the right expert.
Factors Associated With Hispanic Children’s Dental Utilization in Imperial County: CA-CORD Project

Erin Dougherty, MPH; Aarti Gupta, BDS; Tracy L. Finlayson, PhD; Shih-Fan Lin, DrPH; Andreia Morales Cascaes, DDS, MPH, PhD; and Guadalupe X. Ayala, PhD, MPH

ABSTRACT Dental care is underutilized in racial/ethnic, rural and lower-income populations, with significant health consequences. This study used a theory-informed approach to identify predisposing, enabling and need factors important to dental visits among children aged 2–12 years (n=1,113). Findings revealed that child age, caregiver education, child dental insurance coverage and parent-reported child oral health status were positively associated with a child having a past-year dental visit. Promoting children’s dental utilization requires addressing multiple factors.

AUTHORS

Erin Dougherty, MPH, is a doctoral student at San Diego State University and the University of California, San Diego, and a research assistant at the Institute for Behavioral and Community Health in San Diego. Conflict of Interest Disclosure: None reported.

Aarti Gupta, BDS, is a master of public health student studying biometry at the San Diego State University Graduate School of Public Health and a research assistant at the Institute for Behavioral and Community Health in San Diego. Conflict of Interest Disclosure: None reported.

Shih-Fan Lin, DrPH, is a research scientist at the Institute for Behavioral and Community Health in San Diego. Conflict of Interest Disclosure: None reported.

Andrea Morales Cascaes, DDS, MPH, PhD, is an assistant professor in the department of social and preventive dentistry at the Federal University of Pelotas in Brazil and a visiting scholar at the Institute for Behavioral and Community Health in San Diego. Conflict of Interest Disclosure: None reported.

Guadalupe X. Ayala, PhD, MPH, is a professor and the associate director of research at the San Diego State University Graduate School of Public Health and the director of the Institute for Behavioral and Community Health in San Diego and SDSU HealthLINK. Conflict of Interest Disclosure: None reported.

T he American Academy of Pediatric Dentistry (AAPD) recommends that children visit the dentist by age 1 or by first tooth eruption and every six months thereafter in accordance with their risk and susceptibility to dental decay. Early and regular preventive dental care is recommended to keep children caries-free and is especially important for lower-income children who are at greater risk for caries. Significant growth and development occur during childhood between the ages of 2 and 11. This developmental period is an optimal opportunity to intervene and establish healthy oral habits. Younger children in this age range will have their primary teeth and start transitioning to mixed dentition around age 5. Healthy primary
dentition is critical to a future healthy oral cavity; dental caries are more likely to develop in permanent dentition if children have caries in their primary teeth. This developmental period is a crucial time for dental professionals to provide children and families with age-appropriate anticipatory guidance and oral health counseling during regular comprehensive oral exams.

Improving access to dental care and monitoring trends in annual dental utilization is a Healthy People 2020 Leading Health Indicator for the United States.

Nationally, youths aged 2–17 have the highest reported annual utilization rates (54.6 percent) overall compared to other age groups, while dental utilization can drop as low as 34.9 percent for the 18–44 age group. However, some groups of children encounter greater challenges to accessing dental care. A recent study indicated that common barriers to accessing dental care for low-income Latino families in the Midwestern region of the U.S. included high cost, difficulty with provider communication and limited understanding of insurance forms. Additionally, cultural beliefs (e.g., family members or other culturally similar individuals who suggest children only need dental care when in pain), lack of time and limited oral health knowledge of caregivers have been identified as barriers to Hispanic/Latino children receiving dental care.

Nationally, Hispanic children have the lowest dental utilization compared to other ethnic groups in the U.S. According to 2004 data from the Medical Expenditure Panel Survey, Edelstein and Chinn reported that only 32.9 percent of Hispanics under age 21 had a past-year dental visit compared to over half of non-Hispanic children (52.5 percent) and others (43.7 percent). In California, Hispanic/Latino children comprise 51.4 percent of the population under age 18, and in Imperial County, Calif., the majority (89.5 percent) of youths under age 18 are Hispanic/Latino. In 2013–2014, California Health Interview Survey (CHIS) data indicated that fewer children aged 2–11 in Imperial County had a dental visit in the previous six months compared to children in the same age range statewide (71.9 percent versus 74.0 percent, respectively). Approximately 6.5 percent of children aged 2–11 in Imperial County had not been to the dentist in the past year and 8.5 percent had never been to a dentist. By comparison, California data show that 4.1 percent of children aged 2–11 have not been to the dentist in the past year and approximately 9 percent have never been to a dentist. Children living in rural, lower-income communities are at greater risk of not accessing dental care given the lack of providers. The 2010 U.S. census indicated that 17.4 percent of the population in Imperial County lived in rural areas. In 2013, there were 17,400 youths under age 21 on Medicaid living in Imperial County who did not have a past-year dental visit, and only 12 dentists in Imperial County were accepting new dental patients, resulting in a ratio of 1:1,450. In other words, for every 1,450 youths in need of a dental visit, only one dentist was accepting new Medicaid patients. Dental utilization for Imperial County Medicaid recipients under age 21 decreased from 35.8 percent in 2011 to 33.6 percent in 2013. Together, this evidence points to the need for more research on understanding what factors to target to improve dental utilization among those at highest risk: Hispanic/Latino children living in rural, lower-income communities.

This paper investigated caregiver-reported child dental utilization in the past year among a sample of Hispanic/Latino children aged 2–12 in Imperial County, Calif. This study examined the association between select child and caregiver/household predisposing, enabling and need factors and past-year child dental utilization. The analyses were guided by the Andersen Behavioral Model of Health Services Utilization. This is a conceptual model describing three distinct factors that influence health care utilization: predisposing, enabling and need. Predisposing factors are characteristics such as age and race/ethnicity. Enabling factors include health insurance and other resources that facilitate access to care. Finally, need factors refer to an individual’s perception of and actual need for health care services. By examining these three factors, researchers and policymakers can examine the specific factors related to utilization and target specific factors that may be prohibiting utilization of health care.

**Methods**

**Study Design**

This is a cross-sectional, secondary data analysis using baseline data from the California Childhood Obesity Research Demonstration (CA-CORD) study, a multilevel, multisector intervention funded by the Centers for Disease Control and Prevention (CDC) to prevent and control childhood obesity.
Setting
Imperial County is the ninth largest county in California and is an agricultural and inland rural county located on the U.S.-Mexico border with a predominantly Hispanic/Latino population of Mexican origin. This rural community had a population size of 174,528 in 2010, with 77 percent of residents of Hispanic/Latino (mostly Mexican) origin and 32 percent foreign-born. The socioeconomic position of residents is generally lower than the rest of the state of California, with households reporting an average annual income of $39,402. Clínicas de Salud del Pueblo Inc. (CDSDP) is a federally qualified health center (FQHC) and partner on the CA-CORD study. CDSDP was established in 1970 as the first migrant health center in the U.S. and has 13 clinics in Imperial County and south Riverside County, of which two in Imperial County offer dental services.

Participants
The study recruited 1,186 children between the ages of 2 and 11 and 848 caregivers (94 percent mothers) in three rural border communities in Imperial County: Brawley, El Centro and Calexico. To be eligible for study participation, families had to plan to remain in the area for the study's duration of 18 months. The caregiver had to be the child's primary caregiver, live with the child for at least four days a week and understand the English or Spanish language. There were several inclusion criteria for children, including but not limited to: children aged 2–11 at baseline; children with a body mass index (BMI) at or above the fifth percentile; no medical conditions or treatments that affect the child's weight; primary residence in the participating communities; and up to two children per household who meet these criteria.

Data Collection
Caregivers of the participating children completed a baseline assessment protocol, which included an in-person interview in either English or Spanish, between January 2013 and July 2014. Caregivers provided consent to answer questions related to themselves as well as their children. The assessment protocol was conducted at the research office located in a mini-mall and other locations convenient to the participants (e.g., their homes, recreation center or clinic). Research assistants were trained and certified by the evaluation coordinator before conducting the interview. Each participating family received a $20 gift card for completing the survey. If a family had more than one child in the study, the family received an additional $5 for completing a second interview about this child.

All research protocols and materials were approved by the BLINDED Institutional Review Board (IRB).

Variables
Dependent variable: The main outcome variable — amount of time since last dental visit — was queried for each child. Response options were dichotomized to reflect whether or not each child had a past-year dental visit, as reported by the caregiver.

Independent variables: Predisposing factors included the following caregiver characteristics: city of residence, marital status, educational attainment, preferred language and employment status. El Centro was selected as the reference category for the city variable because it was the only city that does not offer dental services through the FQHC. Marital status was initially collected as a categorical variable, then dichotomized to distinguish between married/cohabitating versus single and not married (including divorced and widowed). Education in the U.S. and/or other foreign country were combined and dichotomized to indicate whether the caregiver earned a high school diploma or equivalent. Preferred language was the interview language (English or Spanish) and represented the study’s measure of acculturation given its strong explanatory power and its relevance to dental care utilization. Employment was dichotomized as employed or not employed, and the latter included homemakers and those who were unable to work. Two additional predisposing factors were based on caregiver-reported child characteristics (age and gender).

Enabling factors included the family’s poverty status and the child’s dental insurance coverage. The dichotomous poverty variable was created using the federal poverty level, which was determined from a combination of variables: household size, income, caregiver age and yearly income. Child dental insurance was collected with five categories: none, Medicaid, Healthy Families (California’s children’s health insurance program) or other government program, private insurance and other insurance. Based on the distribution of responses, the child dental insurance variable was collapsed and dichotomized as insured or uninsured.
Two caregiver-reported need factors were included: the child’s oral health status and health-related quality of life. Child oral health status was collected using five categories (poor, fair, good, very good and excellent) and then dichotomized into poor/fair versus good/very good/excellent. Quality of life was assessed using the Pediatric Quality of Life Inventory. A mean score was calculated across all items to obtain a total quality-of-life score for each child, with a higher score indicating a better health-related quality of life (range: 0–100).25,26

Analysis
Descriptive statistics and the extent of missingness were examined for each variable. Missingness was very low across all variables except for poverty level, which was missing for 63 respondents. A total of 73 respondents were lost after case-wise deletion yielding a final analytic sample of 1,113 children from 796 families.

Crude odds ratios were calculated to examine associations between each independent variable and the outcome of a past-year dental visit. The logistic regression model building process was guided by the Andersen Behavioral Model of Health Services Utilization.19 Therefore, all predisposing factors were examined with the outcome, followed by enabling and need factors. Our final model included predisposing, enabling and need factors simultaneously. We examined the correlation matrix among all independent variables and found no multicollinearity. Odds ratio estimates as well as significance tests were stable across all three models, therefore only the fully adjusted final model was reported. Given small family clusters in the study, generalized estimating equations were utilized to adjust for family-level clustering in all of the logistic regression analyses. All analyses were conducted in SAS 9.4. (Cary, N.C.).

Results
Descriptive statistics are presented in Table 1. Most caregivers reported being married/cohabitating (72.9 percent) and having at least a high school diploma (69.6 percent). The majority of caregivers completed the interview in Spanish (77.8 percent). More than half (59.7 percent) of the caregivers were not employed and were living below the poverty line (68 percent). Additionally, caregivers reported their insurance and health status (not shown in Table 1). Most caregivers were enrolled in public insurance (61.5 percent) and had either good (26.6 percent) or fair (28.4 percent) overall health.

Enrolled children were predominantly Hispanic/Latino (98 percent) and most were born in the U.S. (91.5 percent). The mean child age was 6.41 (2.66) years. Child gender was evenly distributed between males and females. Nearly all children had some form of dental insurance (89.7 percent). Approximately half of the caregivers rated their children’s oral health as fair/poor (49.7 percent), yet most reported a high quality of life for their child.

Approximately half of the caregivers rated their children’s oral health as fair/poor (49.7 percent), yet most reported a high quality of life for their child.

TABLE 2 reports both crude odds ratios (OR) and adjusted odds ratios (AOR) from the final logistic regression model. The findings in the crude model (Table 2, left column) are consistent with the findings in the final adjusted model. In the final regression model (Table 2, right column), caregiver education, child age, child dental insurance and child oral health status remained significantly related to past-year dental visits after adjusting for all other variables. Children of caregivers with a high school diploma were more likely to have a past-year dental visit compared to children of caregivers without a high school diploma (AOR = 1.70, 95 percent confidence intervals [CI] = 1.16–2.47, p = 0.006). Child age was positively associated with a past-year dental visit; the odds of a past-year dental visit increased by 12 percent with each additional year in age (AOR = 1.12, 95 percent CI = 1.05–1.19, p = 0.003). Children with dental insurance had higher odds of a past-year dental visit compared to children without dental insurance (AOR = 2.25, 95 percent CI = 1.39–3.66, p = 0.001). Additionally, children whose caregiver rated the child’s oral health as good, very good or excellent had greater odds of a past-year dental visit compared to those who had a rating of fair or poor (AOR = 1.91, 95 percent CI = 1.37–2.67, p = 0.0002).

Discussion
Using a theory-informed approach, this study examined the importance of predisposing, enabling and need factors related to children’s past-year dental visits in a large sample of 2- to 12-year-old Hispanic/Latino children in Imperial County, Calif. Most of the children (76.6 percent) in this sample had a past-year dental visit as reported by their caregiver. A recent report from the California Department of Public Health (DHCS) based on CHIS data estimated that 85.5 percent of children (aged 0–11) in

——

**TABLE 1** Descriptive statistics are presented based on CHIS data estimated that 85.5 percent of children (aged 0–11) in 2018 displayed dental utilization. Most caregivers reported their insurance and health status (not shown in Table 1). Most caregivers were enrolled in public insurance (61.5 percent) and had either good (26.6 percent) or fair (28.4 percent) overall health.

Enrolled children were predominantly Hispanic/Latino (98 percent) and most were born in the U.S. (91.5 percent). The mean child age was 6.41 (2.66) years. Child gender was evenly distributed between males and females. Nearly all children had some form of dental insurance (89.7 percent). Approximately half of the caregivers rated their children’s oral health as fair/poor (49.7 percent), yet most reported a high quality of life for their child.

Approximately half of the caregivers rated their children’s oral health as fair/poor (49.7 percent), yet most reported a high quality of life for their child.
### TABLE 1

#### Descriptive Characteristics: Distribution of Predisposing, Enabling and Need Factors by Past-Year Dental Visit

<table>
<thead>
<tr>
<th>Category</th>
<th>Caregivers N=796</th>
<th>Caregivers by past-year dental visit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N percent</td>
<td>N percent</td>
<td></td>
</tr>
<tr>
<td><strong>Predisposing factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brawley</td>
<td>189 (23.7)</td>
<td>138 (73.0)</td>
<td></td>
</tr>
<tr>
<td>El Centro</td>
<td>234 (29.4)</td>
<td>175 (74.8)</td>
<td></td>
</tr>
<tr>
<td>Calexico</td>
<td>373 (46.9)</td>
<td>297 (79.6)</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>216 (27.1)</td>
<td>167 (77.3)</td>
<td></td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>580 (72.9)</td>
<td>443 (76.4)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school diploma</td>
<td>554 (69.6)</td>
<td>440 (79.4)</td>
<td></td>
</tr>
<tr>
<td>Less than HS diploma</td>
<td>242 (30.4)</td>
<td>170 (70.2)</td>
<td></td>
</tr>
<tr>
<td>Preferred language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>177 (22.2)</td>
<td>131 (74.0)</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>619 (77.8)</td>
<td>479 (77.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Employed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not employed</td>
<td>475 (59.7)</td>
<td>364 (76.6)</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>321 (40.3)</td>
<td>246 (76.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Enabling factor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal poverty line*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above</td>
<td>541 (68)</td>
<td>420 (77.6)</td>
<td></td>
</tr>
<tr>
<td>Below</td>
<td>255 (32)</td>
<td>190 (74.5)</td>
<td></td>
</tr>
<tr>
<td><strong>Need factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child oral health status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair/poor</td>
<td>553 (49.7)</td>
<td>393 (71.1)</td>
<td></td>
</tr>
<tr>
<td>Good/very good/excellent</td>
<td>560 (50.3)</td>
<td>458 (81.8)</td>
<td></td>
</tr>
<tr>
<td>Child total QoL ^</td>
<td>89.74 (10.13)</td>
<td>89.9 (10.22)</td>
<td></td>
</tr>
</tbody>
</table>

---

*Employment (includes full time, 35+ hours/week; part time, less than 35 hours/week; self-employed full time, 35+ hours/week; self-employed part time, less than 35 hours/week; and employed in seasonal labor).

Federal poverty level (FPL), derived based on a combination of variables: household size, annual income and caregiver age and dichotomized to either above or below FPL (2013 FPL family of 4 = $23,550).

QoL (quality of life), higher mean score indicates better health-related quality of life (range 0–100). See methods for detailed explanation.
California had a past-year dental visit. While most children in this sample had a past-year dental visit, this predominantly Hispanic/Latino sample from Imperial County fell below the state average.

Greater caregiver educational attainment was positively associated with children having a past-year dental visit, consistent with other literature. This finding highlights the importance of and need to consider the impact of social determinants of health. Kum and Fine recently applied Frieden's Conceptual Framework to oral health, emphasizing the importance of addressing larger population inequities, such as the level of educational attainment among caregivers, which contributes to their children's health outcomes. As a social determinant of health, education can affect the health of this vulnerable population and must be considered when analyzing dental utilization.

In this sample, as child age increased, the likelihood of a past-year dental visit also increased. Previous research has indicated that very young children under age 3 are less likely than their older counterparts to have a dental visit; most of the children in this sample without a past-year dental visit were 2 or 3 years old. Additionally, the California DHCS requires that all children have a kindergarten dental assessment that must be completed prior to entering first grade in public schools (when children are about 5 or 6 years old), this requirement often prompts caregivers to schedule a dental appointment. This kindergarten assessment may be the first time children are seen by a dentist or dental provider. The highest proportion of children who reported having had a past-year dental visit by age was observed around ages 5 and 6 in this sample (excluding the four children who turned age 12 during the baseline assessment). This suggests that the statewide kindergarten assessment may be an effective policy for prompting dental visits, though it is not known if children saw a dentist prior to that time, at an earlier age. Prior to kindergarten, some young children may be enrolled in either Early Head Start or Head Start, which are public preschool programs for low-income children. Any child enrolled in Head Start must establish a dental home and be up to date with a recommended early and periodic screening, diagnostic and treatment program, scheduling within 90 days of enrollment. A recent qualitative study of barriers to dental utilization for Medicaid recipients in California found that a common barrier was the caregiver belief that young children (aged 1 to 6) were too young for a dental visit. Many parents may not be aware of AAPD dental utilization guidelines for very young children. The finding that young children are low dental utilizers is an opportunity for collaboration between medical and dental providers; medical practitioners can assist by communicating recommended dental utilization guidelines to parents, screening for oral health problems and referring children to dentists.

Dental insurance is an important enabling factor for dental utilization by children. Previous research shows that regardless of insurance type, children with any type of dental insurance, public or private, are more likely than their uninsured counterparts to have at least one past-year dental visit. Of those with dental insurance in our sample, the majority reported public insurance, with only 13 percent reporting private dental insurance (data not shown). There was a discrepancy in caregiver knowledge about what public insurance covered. Some caregivers reported that their child had public insurance but did not have dental coverage, indicating a lack of knowledge concerning benefits available to their child. While an outcome of interest, it is important to note that 5.4 percent of the sample was unaware their child had dental insurance coverage and may have likely underutilized available dental benefits in their publicly funded plan. As previously discussed, limited understanding of insurance is a barrier to dental care. This finding has both policy and practice implications. Improved integration between medical and dental care and the use of patient navigators to explain Medicaid coverage during the enrollment process may benefit this population. There is a need for integrated health services and multiagency collaboration to improve access to oral health care.
### TABLE 2

Crude and Adjusted Odd Ratios of Past-Year Child Dental Visit by Predisposing, Enabling and Need Factors (N = 1,113)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Bivariate</th>
<th>Adjusted final model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crude OR</td>
<td>95% CI</td>
</tr>
<tr>
<td><strong>Predisposing factors (caregiver)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brawley</td>
<td>1.00</td>
<td>0.65–1.52</td>
</tr>
<tr>
<td>El Centro</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Calexico</td>
<td>1.39</td>
<td>0.96-2.03</td>
</tr>
<tr>
<td>Married</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Not married</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>1.04</td>
<td>0.72-1.50</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school diploma</td>
<td>1.62*</td>
<td>1.16–2.26</td>
</tr>
<tr>
<td>Less than HS diploma</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Preferred language</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Spanish</td>
<td>1.04</td>
<td>0.71-1.53</td>
</tr>
<tr>
<td><strong>Employed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not employed</td>
<td>1.08</td>
<td>0.78-1.50</td>
</tr>
<tr>
<td>Employed</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Predisposing factors (child)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.09*</td>
<td>1.03–1.15</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Male</td>
<td>0.81</td>
<td>0.61-1.09</td>
</tr>
<tr>
<td><strong>Enabling Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal poverty line ~</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Above</td>
<td>1.16</td>
<td>0.82–1.63</td>
</tr>
<tr>
<td>Child dental insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2.12*</td>
<td>1.34–3.38</td>
</tr>
<tr>
<td>No</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Need factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child oral health status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair/poor</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Good/very good/excellent</td>
<td>1.83*</td>
<td>1.34–2.49</td>
</tr>
<tr>
<td>Child total QoL ^</td>
<td>1.01</td>
<td>0.99-1.02</td>
</tr>
</tbody>
</table>

*p<0.01

Employment (includes full time, 35+ hours/week; part time, less than 35 hours/week; self-employed full time, 35+ hours/week; self-employed part time, less than 35 hours/week; and employed in seasonal labor).

Federal poverty level (FPL), derived based on a combination of variables: household size, annual income and caregiver age and dichotomized to either above or below FPL (2013 FPL family of 4 = $23,550).

QoL (quality of life), higher mean score indicates better health-related quality of life (range 0-100). See methods for detailed explanation.
demonstrated dental utilization increases in both San Francisco and Alameda County. The Children’s Oral Health Strategic Plan in San Francisco demonstrated the importance of interagency collaboration to improve oral health care and utilization; the Alameda County Oral Health Strategic Plan utilizes Women, Infant and Children (WIC) centers and school health centers for dental screenings and referrals. Both are examples of utilizing strategic plans and collaboration to address oral health inequities through sustainable and innovative programs. The state of California has been developing an oral health plan and local health departments and counties are being prompted to strategize as well. These findings suggest specific predisposing, enabling and need factors that should be considered for this population in Imperial County.

Factors affecting dental utilization for the Hispanic/Latino population in Southern California include language and transportation barriers as well as prohibitive out-of-pocket costs, with or without insurance. Furthermore, literature indicates that low English proficiency is a barrier to health care, including dental care. There are several initiatives in California that would benefit Imperial County. California utilizes registered dental hygienists alternative practice (RDHAP), licensed dental hygienists who have received specialized training allowing them to practice outside of a traditional dental setting and provide preventive services. While RDHAP are a strong force in California, according to the California Dental Hygienists’ Association, they are not currently active in Imperial County. RDHAP flexibility and specialized training would allow for the provision of preventive dental care in a setting convenient for underserved populations in rural communities such as Imperial County. Furthermore, California was one of the first states to adopt teledentistry policies, which allow dentists to connect to patients through technology and provide dental care to previously isolated populations. Teledentistry has been shown to be helpful in connecting patients and providers in rural areas and is worth exploring in Imperial County.

There also may be an opportunity to explore involving community dental health coordinators (CDHCs) in the delivery of care. CDHCs are a recent addition to the dental team, and their role is to promote oral health behaviors and help connect those in need to dental care. CDHCs are currently working in nine states, including California. They focus on preventive dental care and oral health education in rural areas and can help families address needs and barriers to dental care. More common in California and Imperial County are community health workers (CHWs), or promotoras de salud (promoters of health). CHWs are community members who work to promote health in their own communities and traditionally represent underserved communities. Success with CHWs has been shown to promote health in rural areas near the U.S.-Mexico border.

Historically, CHWs have not been involved in dental health promotion, however, a recent assessment of a California-based CHW intervention shows promising results. Hoeft et al. (2016) developed a theory-informed, CHW-led oral health education program for rural Latino parents to improve preventive oral health knowledge and behaviors for their children. Results showed significant improvement in knowledge and self-reported oral hygiene behaviors for children of participants and behavior change was sustained at three months, demonstrating the effectiveness of the intervention. Additionally, results indicate the acceptability and cultural appropriateness of CHWs for the rural Latino population. CHWs are a strong force in Imperial County and expanding their role to include dental health promotion would be beneficial for the predominantly rural, Spanish-speaking, Latino population.

Caregiver perception of child oral health status was positively associated with whether a child had a past-year dental visit. Due to the cross-sectional nature of the data, causality cannot be inferred, however the data indicate that caregivers who reported a more favorable oral health status for their child were also more likely to report that the child had a past-year dental visit. Children between the ages of 2 and 12 are not making their own care-seeking decisions; therefore it is important to consider parental perceptions. A possible explanation for this finding is that caregivers who reported a more favorable oral health status for their child were more informed, CHW-led oral health education program for rural Latino parents to improve preventive oral health knowledge and behaviors for their children. Results showed significant improvement in knowledge and self-reported oral hygiene behaviors for children of participants and behavior change was sustained at three months, demonstrating the effectiveness of the intervention. Additionally, results indicate the acceptability and cultural appropriateness of CHWs for the rural Latino population. CHWs are a strong force in Imperial County and expanding their role to include dental health promotion would be beneficial for the predominantly rural, Spanish-speaking, Latino population.

Caregiver perception of child oral health status was positively associated with whether a child had a past-year dental visit. Due to the cross-sectional nature of the data, causality cannot be inferred, however the data indicate that caregivers who reported a more favorable oral health status for their child were also more likely to report that the child had a past-year dental visit. Children between the ages of 2 and 12 are not making their own care-seeking decisions; therefore it is important to consider parental perceptions. A possible explanation for this finding is that caregivers who reported a more favorable oral health status for their child were more informed, CHW-led oral health education program for rural Latino parents to improve preventive oral health knowledge and behaviors for their children. Results showed significant improvement in knowledge and self-reported oral hygiene behaviors for children of participants and behavior change was sustained at three months, demonstrating the effectiveness of the intervention. Additionally, results indicate the acceptability and cultural appropriateness of CHWs for the rural Latino population. CHWs are a strong force in Imperial County and expanding their role to include dental health promotion would be beneficial for the predominantly rural, Spanish-speaking, Latino population.

Caregiver perception of child oral health status was positively associated with whether a child had a past-year dental visit. Due to the cross-sectional nature of the data, causality cannot be inferred, however the data indicate that caregivers who reported a more favorable oral health status for their child were also more likely to report that the child had a past-year dental visit. Children between the ages of 2 and 12 are not making their own care-seeking decisions; therefore it is important to consider parental perceptions. A possible explanation for this finding is that caregivers who reported a more favorable oral health status for their child were more informed, CHW-led oral health education program for rural Latino parents to improve preventive oral health knowledge and behaviors for their children. Results showed significant improvement in knowledge and self-reported oral hygiene behaviors for children of participants and behavior change was sustained at three months, demonstrating the effectiveness of the intervention. Additionally, results indicate the acceptability and cultural appropriateness of CHWs for the rural Latino population. CHWs are a strong force in Imperial County and expanding their role to include dental health promotion would be beneficial for the predominantly rural, Spanish-speaking, Latino population.
they are experiencing pain. Additionally, younger children who may be unable to verbalize their pain to their caregivers may not receive the care they need.

The limitations of the study must be considered when interpreting the findings. The analysis was cross-sectional; therefore, no causation can be established. Additionally, the data collected regarding children’s past-year dental visits did not specify the reason (preventive care versus treatment for pain or dental caries). Further, it is not known if all dental needs were met, even among those reporting that they had a visit and utilized services. All the variables depended on caregiver report and therefore may be influenced by recall bias or social desirability; none of the self-report data were confirmed with objective clinical assessment measures. While the analysis is strengthened by theory, it is important to note the temporal disconnect. Often, including these analyses, the outcome of “past-year dental utilization” is reported in a historical context; however, predictors (i.e., oral health status in this sample) are assessed at the time of survey administration but with no more than a one-year difference. Despite these limitations, the sample was large and included 1,113 children from 796 families and gender was evenly distributed, which contributes to external validity. The profile of the sample studied is similar to the demographic profile of families of this rural U.S.-Mexico border community; however, this sample was not randomly selected. The analysis included social determinants of health and a psychosocial variable (quality of life), which was assessed using a validated and reliable scale. Additionally, the analysis was guided by the Andersen Behavioral Model of Health Services Utilization and informed variable selection. Notably, there were significant predisposing, enabling and need factors identified.

While predisposing factors cannot be changed, enabling and need factors have the potential for modification. Policy changes can influence dental insurance and access to care while educational initiatives and multigency collaboration can improve understanding of the importance of dental care. The multilevel associations demonstrate that oral health does not exist in a vacuum and a variety of factors influence dental utilization. Future studies must continue to explore predisposing, enabling and need factors.

This study highlights the need to focus on social determinants of health because broader level factors (community, environment and family) can influence child dental utilization. It is important that future studies further refine their examination of dental utilization by specifically examining types of dental visits (preventive versus treatment) and whether children still have existing unmet dental needs or are in pain. Additionally, future studies should strive to include more individual and contextual factors specific to rural Latinos’ access to dental care, such as social constructs (i.e., value/importance of oral health) and the health care system (i.e., provider-to-patient ratios and provider language/ethnicity). Overall, our findings contribute to the existing but limited literature regarding dental utilization for Hispanic/Latino children living near the U.S.-Mexico border.

Conclusion
Caregiver education, child age, dental insurance status and caregiver-reported child oral health status were positively associated with children having a past-year dental visit. These findings indicate that certain social determinants of health may be associated with children’s past-year dental visits in this population and must be examined in future studies.

ACKNOWLEDGMENTS
This research was supported by cooperative agreement U18DP003377-01 from the Centers for Disease Control and Prevention (multiple principal investigators: Guadalupe X. Ayala, PhD, MPH, Leticia Ibarra, MPH, Clinicas de Salud del Pueblo Inc. and Amy Bingelli-Yallanta, DrPH, RD, Imperial County Public Health Department). The authors thank the wonderful staff and administration of San Diego State University Research Foundation, Clinicas de Salud del Pueblo Inc. and the Imperial County Public Health Department who are making these efforts happen, as well as members of the community advisory board. The authors also thank the participating families who provided these data and the evaluation staff who collected these data. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Centers for Disease Control and Prevention. S. Lin and G.X. Ayala had support from a research grant for the study.

REFERENCES
...
Case Report: Integrating Teledentistry To Augment Clinical Outcomes in a School-Based Setting

Corey D. Stein, DMD, MS; Mahmoud Hamad, BA; Alexander Lee, DMD; and Marisa K. Watanabe, DDS, MS

ABSTRACT The rapid expansion of teledentistry applications is bridging gaps that limit underserved communities from accessing oral health care. In partnership with a Southern California city school district, teledentistry was implemented to support a web-based dental communication platform, which collected and electronically exchanged patient-reported data to remotely located dentists. This case report discusses a 9-year-old child’s dental discomfort and how a network of health care providers can apply teledental technologies to expedite oral health intervention and pain relief.

Access to oral health care barriers prevent more than one-third of Americans from receiving optimal dental care. In California, nearly 40 percent of citizens are uninsured — creating a barrier keeping underserved populations from obtaining dental services. School-aged children are a substantial subset of the uninsured population. Of the school-aged children in the U.S., nearly 60 percent suffer from untreated tooth decay resulting in missed school. The shortage of Medicaid oral health care providers who are available to treat underserved communities has created opportunities for new advancements using information and communication technologies to improve primary, secondary and tertiary oral health care services.
Teledentistry merges both telecommunications and dentistry in order to exchange clinical information and images over a remote distance with the goal of enhancing consultations and referrals, treatment planning and data collection. The penetration of web-based technologies across all American demographics has also allowed teledentistry to impact a greater number of underserved populations at more affordable costs. 

However, very few teledental applications have been developed for patients or individuals with limited dental knowledge to directly communicate and interact with oral health care professionals. This includes physicians and medically trained personnel who are often less confident with diagnostic terminology and managing patients’ oral health. Teledentistry is often cited as an aid for providing surveillance over underserved populations, though few studies demonstrate the direct benefits it provides to both dentists and patients with routine or emergent dental needs. In an article published in the March 2018 issue of the Journal of the California Dental Association, the authors reported the implementation of an informatics-based intervention to improve communication and coordination of care between the El Monte City School District (EMCSD) primary care personnel and the school-based oral health center (SBOHC) established in El Monte, Calif. The protocol is structured around DentaCom — a trademarked, user-friendly, web-based communication platform that allows parents, school nurses and staff to electronically report oral health concerns of children within the school district. The application was developed by author Corey D. Stein, DMD, MS, following iterative analyses of usability design principles prior to clinical implementation. Supported by pediatric and general dentists and predoctoral dental students at the Western University of Health Sciences, College of Dental Medicine (WesternU CDM), DentaCom provides the EMCSD students and surrounding El Monte community with complete access and continuity of dental care when direct contact is not possible.

While the software is intended to be applicable throughout the city’s school district and beyond the proximal community, this pilot implementation of the protocol was isolated for use by the EMCSD primary care health professional team. This allowed the authors to best monitor any unanticipated circumstances inherent to technological adaptations. As DentaCom’s performance continues to assist providers and patients seeking care, the safety and assurance of the protocol must be validated by analyses of each attempt of intervention. To demonstrate the advantages of teledental implementations in a school-district setting, the authors present the following case report that reflects routine scenarios encountered by school-aged patients within the EMCSD and surrounding community. The authors outline an individual patient’s need for emergent dental attention, the challenges encountered toward streamlined care and the benefits provided by a teledental protocol such as DentaCom for both the patient and dental providers involved.

DentaCom Pilot in El Monte City School District

A 30-minute DentaCom orientation was provided to the EMCSD health chairperson along with the health assistants and family nurse practitioner who are stationed throughout the EMCSD schools, with the goal of creating a more efficient process of dental emergency triage and connecting children to a dental home. This interprofessional approach to addressing the holistic needs of children in El Monte further emphasizes the importance of integrated care as well as the need for complete transparency and communication in health care. Verbal as well as written instructions were provided to all those present followed by a question-and-answer period for the EMCSD health professional team.

To complete a report using DentaCom, any web-based device such as a mobile phone, tablet or a laptop/desktop computer can be used; upon submission, the DentaCom user can download and save a PDF copy of the report. The submitted DentaCom report, which is Health Insurance Portability and Accountability Act (HIPAA) compliant, triggers an alert to the WesternU CDM dental providers to remotely triage and assess the patient’s case, as well as to follow up with the patient’s parent/guardian. Upon receipt of the DentaCom report, WesternU CDM dental providers receive instructions that include a review of the case, completion of the DentaCom emergency triage form in axiUm — WesternU CDM’s electronic dental record — uploading the submitted report and a written note for the on-site SBOHC dental provider. The written documentation in axiUm would summarize the findings from DentaCom to prepare the WesternU CDM dental provider, in this case located at the WesternU CDM Jeff...
Seymour Family Center (JSFC) dental clinic, for the patient’s scheduled limited oral examination (LOE). Throughout this pilot, the WesternU CDM dental providers continued to be in direct communication with the trained DentaCom EMCSD health professional team to provide the best care for the child.

Prior to releasing the ability for all members of the community, including but not limited to teachers, administrators, parents and grandparents, to utilize the DentaCom application, this small pilot was conducted initially with the EMCSD health professional team only. Following this pilot project, additional individuals who are most in contact with the children in El Monte will be oriented through a “Train the Trainer” event with the EMCSD health professional team along with the WesternU CDM DentaCom team.

**Patient Case Report**

On Sept. 14, 2017, a 9-year-old EMCSD student presented with her grandmother to the JSFC medical health clinic in El Monte for her annual physical examination conducted by the trained DentaCom family nurse practitioner and health assistant. The child presented with no systemic conditions, allergies or medications nor significant medical history. However, the child reported intermittent pain in her mouth, likely attributed to dental discomfort, and indicated her lower right quadrant.

With no dental professional staff on-site at the JSFC dental clinic that day, the health assistant opened the DentaCom application using her mobile device to create a case report about the student’s need for dental attention. The DentaCom report submitted by the health assistant included the questionnaire and picture uploaded directly to the report. Within the application, the photograph of the child’s chief complaint was captured using a smartphone with no specific instructions on technique or lighting requirements. As the DentaCom report is currently limited to English, the health assistant helped translate questions directed to the grandmother into Spanish and spoke Spanish with the child in order for the grandmother to understand the conversation. Upon completion of the DentaCom report, the report was electronically transmitted for triage and assessment by dentists at WesternU CDM located 20 miles away.

**DentaCom Patient Case Assessment**

At 3:34 p.m. on Sept. 14, 2017, WesternU CDM clinical faculty received a text message and an email notification instructing, “Please check your DentaCom report within 48 hours: westernu.qualtrics.com.” The clinical faculty began the triage and assessment sequence by signing into the Qualtrics platform and downloading the completed DentaCom report (completed by the EMCSD health assistant), creating a “new patient” in axiUm and uploading the DentaCom report into the patient’s electronic dental record. In axiUm, the clinical faculty completed the DentaCom emergency triage form, which is divided into triage record, patient case assessment and patient communication record sections. These sections summarized the information captured in the DentaCom report and included an evaluation of the case severity, urgency and difficulty. Based on the information from the DentaCom report, the child’s pain was not excruciating, throbbing or prolonged but was intermittent and at times compromised the daily function of eating. It was determined that the child required the first available appointment, and that the case was manageable by a WesternU CDM dental student provider working with a WesternU CDM dental faculty.

While working together with a Spanish-speaking WesternU CDM registered dental assistant on scheduling an LOE at the JSFC dental clinic with the child’s grandmother, the clinical faculty identified that the patient’s grandmother who helped complete the report was not the legal parent or guardian of the child. This circumstance prohibited treatment from being provided until a required WesternU CDM parent/guardian substitution form (available in multiple languages including Spanish) could be completed by the child’s parents to permit the grandmother to give consent for care. At the time of acknowledgment, the clinical faculty electronically provided the trained DentaCom EMCSD health assistant with the proper WesternU CDM parent/guardian substitution form in Spanish and the health assistant helped the grandmother with its completion. The EMCSD health assistant also electronically sent these documents to the child’s parents who were located in Mexico at the time. Within 24 hours, the child’s parents received the documents more than 150 miles away, appended the appropriate signatures and exchanged the forms back to WesternU CDM where they were added to the patient’s axiUm chart prior to the scheduled appointment at the JSFC dental clinic on Sept. 18, 2017.

The photograph of the child’s chief complaint was captured using a smartphone with no specific instructions on technique or lighting requirements.
Utilizing the information in the case report and following the DentaCom protocol prior to the patient presenting for treatment prevented complications attributed to performing any evaluation or treatment on the child without the proper consents and documentation. While the consent forms were being completed, a preliminary treatment plan was created based on the child's complaint, signs, symptoms and images reported through the DentaCom report on Sept. 14, 2017. Upon initial evaluation of the DentaCom report, the clinical faculty at WesternU CDM identified teeth Nos. R and S as being suspicious for the patient's reported intermittent pain. The WesternU CDM clinical faculty recommended further clinical and radiographic assessment for final diagnosis. From the DentaCom report, the initial recommended treatment plan included an extraction or pulpotomy with a stainless steel crown for tooth No. S and a direct restoration with a possible pulpotomy for tooth No. R.

Following the preliminary assessment of the DentaCom report, the clinical faculty documented the summary of the findings in the emergency triage form in axiUm to communicate with the JSFC dental student provider and dental faculty provider who would evaluate and treat the child on Sept. 18, 2017.

**Patient Presentation at WesternU CDM JSFC Dental Clinic**

On Sep. 18, 2017, the WesternU CDM pediatric dentist and dental student provider reviewed the case and prepared the operatory and armamentarium accordingly prior to the DentaCom patient's arrival at the JSFC dental clinic. This included the cassette trays for radiographs, oral surgery and pediatric endodontic therapy along with the necessary materials required for these procedures. A thorough clinical and radiographic examination was still required prior to diagnosing and performing any treatment. However, the WesternU CDM dental student who was assigned the patient's LOE could better prepare for the patient clinical encounter in order to expedite care and pain relief for the child.

At 9 a.m., the patient presented to the JSFC dental clinic with her grandmother, where both the WesternU CDM pediatric dentist and dental students anticipated their arrival. The operatory had been dressed, a Spanish-speaking dental student provider had been assigned to the child to return.

Through the DentaCom application, the child was able to establish the JSFC dental clinic as her permanent dental home, and the grandmother scheduled the child to return.

The LOE revealed reversible pulpitis due to caries at tooth No. L that caused the patient pain on chewing and upon exposure to cold and sweet sensations. Clinical and radiographic evidence of extensive primary caries on the occlusal surfaces of Nos. K, L, R and S were also documented. Caries excavation and a sedative glass ionomer restoration relieved tooth No. L of symptoms prior to treatment recommendation of a stainless steel crown for greater coronal protection.

All educational and procedural resources required by the WesternU CDM dental student to complete the patient encounter effectively and efficiently were prepared because of the prior information made available by the DentaCom communication platform.

Although originally planned for an LOE and treatment to relieve pain, the child lacked a dental home and the WesternU CDM dental faculty and student noted that the child required substantial oral health treatment. Through the DentaCom application, the child was able to establish the JSFC dental clinic as her permanent dental home, and the grandmother scheduled the child to return for a postoperative evaluation of tooth No. L, as well as her comprehensive oral examination. Therefore, because the DentaCom-trained EMCSD health professional team completed the case report at the child's physical examination, the child received regular comprehensive treatment at the JSFC dental clinic including endodontic therapies and indirect restorations and was scheduled for extractions of unrestorable teeth (including No. S) in conjunction with orthodontic space maintenance.

Additionally, the trained DentaCom EMCSD health professional team was kept in constant communication in regards to the patient's completed DentaCom cycle of referral, scheduling, the patient's
confirmed presence at the JSFC dental clinic and follow-up to the health professional team through in-person, telephone and HIPAA-compliant emails utilizing the Hightail web-based service.15

**DentaCom-Trained EMCSD Health Professional Team and WesternU CDM Dental Team Response to DentaCom**

The DentaCom-trained EMCSD health assistant completed this DentaCom report through her mobile device and stated that the completion of the report took no more than five minutes. The EMCSD family nurse practitioner who conducted the child’s annual physical examination regularly performs an oral screening as part of the physical examination and responded that the additional five minutes for this child beyond the oral health screening allowed for gathering of more data and did not interfere with the child’s scheduled physical examination appointment. The one recommendation for improvement for DentaCom was to translate the DentaCom report into multiple languages for the families including but not limited to Spanish, Chinese and Vietnamese.

**WesternU CDM Clinical Faculty DentaCom Triage Team**

The WesternU CDM clinical faculty involved with extracting the DentaCom report, documenting patient data and attaching the report to the electronic dental record completed the process within 10 minutes. Due to the need for communication and coordination among multiple parties to complete the parent/guardian substitution form, the majority of the time was spent on the most efficient and practical process to obtain legal consent for the grandmother to make the oral health decisions for her grandchild. Two recommendations were provided to improve the axiUm DentaCom emergency triage form: 1) allow the option to insert an individual’s name who completed and submitted the DentaCom report (currently limited to specific individual names) and 2) increase the amount of words that can be used in the section “Additional Notes to Provider” as currently there is a word limit. No recommendations were provided to improve the DentaCom report, the process for extracting and for uploading data to axiUm.

**Discussion**

The child presented in this case report suffered moderate dental pain and was fortunate to receive dental interventions prior to the progression of her disease state or an impending emergent scenario. While this child’s oral health complaints were discovered at a school-based physical examination, it is not uncommon for school nurses and teachers to be the first encounter when students present with dental pain. Providing the school district with access to the WesternU CDM’s informatics-based communication protocol permits a more expedited treatment of individuals’ oral health needs while creating an access point for individuals to locate a permanent dental home.
In addition to the advantages that the teledental protocol awards the patient, the value of obtaining clinically meaningful information regarding a patient’s chief concerns will assist a provider’s preparedness. As evidenced here, prior knowledge of the patient’s signs and symptoms successfully allowed clinical faculty at WesternU CDM to determine if the case was suitable for predental dentistry students with supervision from dental faculty as well as to schedule the child for the soonest available appointment. The protocol also allowed easy access for the WesternU CDM, dentistry and dental student to review incoming cases prior to their presentation to the dental clinic. For this case report, the patient’s information provided prior to the patient present in the dental chair streamlined treatment, which could result in increased clinic effectiveness through faster chair availability to seat additional patients.

Moreover, caries prevention programs for school-aged children are aimed toward minimizing the prevalence of oral disease within a community. The consequences of untreated, preventable tooth decay not only diminishes the quality of life for the individuals but also impacts statewide public health initiatives. The American Dental Association estimates that every 15 seconds, on average, an individual visits a hospital emergency department for a dental condition. Similar reports cite that $2.2 billion of taxpayer money has been spent on dental-related hospital visits of which 80 percent were due to preventable dental conditions.

With the majority of dental-related emergency room visits nearly as preventable as dental diseases themselves, innovative solutions to enhance public health and personalized care need to be developed and provided to communities who face health disparities. An example of teledentistry through DentaCom allowed a more direct interprofessional approach toward expediting this child’s care. While the protocol implemented in this school-based setting may not be suitable for every community, it provides preliminary evidence of a low-cost solution for strengthening patient-provider relationships that can be tailored to other community health care settings. This does not take into account the creation of the web-based application, but more so preventing emergency room visits by providing direct communication with a dental provider.

The pilot project provided a direct interprofessional approach toward communicating, cooperating, coordinating and collaborating between primary and oral health care providers.

Conclusion
This successful pilot project implementation of DentaCom is demonstrated by the early intervention of the child’s dental disease state discussed above. Through the protocol administered in partnership with WesternU CDM and the EMCSD, the child’s clinical symptoms were triaged remotely by dentists, a preliminary treatment plan was created and consent forms were prepared prior to the patient presenting to the dental clinic for the LOE. Subsequently, the dental providers assigned this case were able to better anticipate the child’s dental needs and allocate proper time, materials and resources to enhance clinical efficiency. The child’s acute moderate dental pain was relieved at the earliest appointment available and, subsequently, established the JSFC dental clinic as the child’s permanent dental home for comprehensive care.

Additionally, the case report presented here further demonstrates the value of collecting and exchanging clinical information to improve the prognosis of oral health diseases while increasing health care utilization. Though this protocol was limited to private use for a single school district, the implementation and effects can be transferrable to other communities afflicted by oral health disparities such as remotely located rural or urban underserved areas.

Teledental applications are designed to streamline patient care and improve clinical outcomes for patients. The pilot project discussed suggests that by remaining adaptable, affordable, integrated with practice management systems and user-friendly, the results can be beneficial for the patient’s health. Most advantageously, the pilot project provided a direct interprofessional approach toward communicating, cooperating, coordinating and collaborating between primary and oral health care providers in order to address this child’s oral health care. Employing DentaCom through the school district’s health coordinators allows WesternU CDM surveillance to facilitate patient-provider communication, preliminary treatment planning and patient monitoring.

Limitations
This article describes a single case report using an alternative approach for individuals seeking oral health care when direct contact with dental professionals is unavailable. Although additional case reports have been received detailing various dental concerns, only anecdotal and qualitative data can be derived by the experiences encountered from those patients, school district staff
and health care professionals discussed. In addition, exercising this pilot study exhibits occurrences that may be native to the unique partnership between the city’s school district and dental institution. Transferring this technology to other environments requires back-end alterations to adjust settings and appropriate access to health information in addition to deviation from previously established protocols. Nonetheless, the authors’ intentions are to promote the effectiveness of merging informatics with clinical care while stimulating similar innovations to advance access to oral health care. Definitive conclusions regarding the value and efficacy of the protocol implemented must be reserved until greater evidence is established.

ACKNOWLEDGMENT
The authors gratefully acknowledge Dean Steven Friedrichsen, DDS, and Bradley Henson, DDS, PhD, for their support toward implementing this protocol. Additionally, the authors acknowledge Jamie Parado, DDS, the community-based dental education leaders at the Western University of Health Sciences, College of Dental Medicine and the continued partnership with the El Monte City School District and, in particular, the Jeff Seymour Family Center.

REFERENCES

THE CORRESPONDING AUTHOR, Marisa K. Watanabe, DDS, MS, can be reached at mwatanabe@westernu.edu.

do:10.4103/22310762.97695.
Solid protection.

Coverage that’s designed only for dentists from TDIC to help you practice with confidence and reduce your risk. Just one of the limitless member benefits at cda.org.

CDA. THIS IS WHERE STRONG MEETS SMART.
Survey of Dental Students and Recent Graduates’ Knowledge, Attitudes and Practices in Regard to Treating Patients With Special Health Care Needs

Haejin Kang, BS; Francisco Ramos-Gomez, DDS, MS, MPH; and Hamida Askaryar, MPH, RDH

ABSTRACT Providing quality oral health care for patients with special health needs requires special training. This study is a survey investigating dental students’ and recent graduates’ level of knowledge, attitudes and practices when treating patients with special health needs. Even though more than one-third of dental students (53/137) reported not feeling confident in treating patients with special needs (p < 0.002), they reported significantly higher levels of confidence with the increase in the number of clinical experiences treating patients with special health needs (p<0.001).

ACCORDING TO THE U.S. CENSUS BUREAU, APPROXIMATELY 36.3 MILLION ADULTS AND 12.5 MILLION CHILDREN HAVE A DISABILITY. FOR EXAMPLE, ACCESS TO DENTAL CARE IS A SIGNIFICANT PROBLEM FOR CHILDREN WITH SPECIAL NEEDS COMPARED TO THE GENERAL POPULATION OF CHILDREN. PROBLEMS THAT PATIENTS WITH SPECIAL NEEDS ROUTINELY FACE INCLUDE OFFICE PROCEDURES NOT ACCOMMODATING TO PEOPLE WITH SPECIAL NEEDS, INADEQUATE HEALTH COVERAGE, COMPETING HEALTH ISSUES, FEAR OF HEALTH CARE, LOW PRIORITY FOR ORAL HEALTH, UNCONTROLLED OR POOR MOTOR FUNCTION AND INADEQUATE COMMUNICATION SKILLS. THERE ARE ALSO SYSTEMS ISSUES IMPACTING THE ORAL HEALTH OF PATIENTS WITH SPECIAL NEEDS, SUCH AS CONFINEMENT TO A BED OR WHEELCHAIR, CAREGIVER DEPENDENCE, LACK OF APPROPRIATE SERVICES, LIMITED COVERAGE FOR SPECIAL NEEDS, POOR INSTITUTIONAL DENTAL SERVICES AND LACK OF ORAL HEALTH EXPERTISE. UNMET DENTAL CARE NEEDS FOR PATIENTS WITH SPECIAL NEEDS IS ONLY SECOND TO PRESCRIPTION MEDICATION IN THE FREQUENCY OF NEED.

DENTAL CARE FOR PATIENTS WITH DISABILITIES REQUIRES ADDITIONAL KNOWLEDGE, TRAINING AND AWARENESS, BECAUSE THE PATIENTS’ DISABILITIES LIMIT THEIR ABILITY TO UNDERSTAND, ASSUME RESPONSIBILITY FOR AND COOPERATE WITH DENTAL PROCEDURES. DENTAL CARE PROVIDERS MUST CONSIDER A...
McClintock and colleagues wrote: "There is a wide range of assessment and treatment options for patients with special needs. This survey”.

They continued: "To accommodate for these challenges, the Commission on Dental Accreditation (CODA) adopted a standard in 2004 addressing that “graduates must be competent in assessing the treatment needs of patients with special needs.” The CODA standard 2–24 states, “An appropriate patient pool should be available to provide experiences … clinical instruction and experience with patients with special needs should include instruction in proper communication techniques and assessing the treatment needs compatible with the special needs.” The intent of this standard underlines the importance of providing sufficient clinical experiences in treating patients with special needs. A study by Casamassimo shows how different types of educational experiences in dental school affect the dental students’ willingness to treat patients with special needs later in life. Those who received no educational experiences treating patients with special needs in dental school were significantly more likely to report that they never treated patients with special needs. Dentists with clinical experiences in dental schools with patients with special needs were less likely to find the “level of disability and patient behavior” as obstacles to care. With the increase in demand for providers to treat patients with special needs and a lack of trained providers, it is crucial that student dentists are not only educated but also clinically trained to provide quality oral health care needs for these patients.

The purpose of this study was to assess the knowledge, attitudes and practices of University of California, Los Angeles, (UCLA) dental students and recent graduates treating patients with special needs with the ultimate goal of enhancing the current dental school curriculum to help create a new cadre of dentists willing and prepared to adequately care for patients with special needs.

Materials and Methods

This was a cross-sectional pilot study (UCLA IRB No. 16-000137). An email with a link to a Google survey was sent to 255 third-year (class of 2018), fourth-year (class of 2017) and recently graduated dental students (class of 2016) from the UCLA School of Dentistry (SOD). The UCLA SOD is part of a large urban academic health sciences center. The electronic mailing list included all of the dental students enrolled in each class year. This survey explicitly stated that participation in this study was voluntary and that completing the survey was considered the respondent’s consent to participate. The email was sent in June 2016 and data were collected for one week. The survey included a section where the dental students were asked to enter their three-digit student identification number, which was solely used to identify students by their class year (TABLE 1).

The confidential survey contained 21 questions inquiring about their knowledge, attitudes and practices (KAP) in regard to patients with special needs. Assessment of attitudes included aspects of willingness and confidence. Assessment of practices included aspects of experience and competence. The survey questions were based on the American Academy of Pediatric Dentistry’s (AAPD) definition of special health care needs and guidelines on the management of dental patients with special health care needs. Below is a breakdown of the questions by KAP (all survey questions are in TABLES 2 and 3). Questions from KAP survey:

- Knowledge: Q1–4, Q18, Q19
- Attitudes: Q5–14, Q16, Q17
- Willingness: Q7, Q8, Q9
- Confidence: Q5, Q6, Q16
- Practices: Q15, Q20
- Clinical experience: Q15
- Clinical competence: Q20

For example, question No. 2 asked to what extent the students agreed or disagreed with the statement: I know the clinical presentation, oral habits and appointment structure of special needs patients (TABLES 2 and 3). Questions were also asked to assess attitudes by focusing on confidence and willingness to treat patients with special needs. For example, question No. 6 asked the students to select the response that indicated their level of confidence in their ability to treat patients with autism knowing that these patients present with different levels of impairment. Question No. 7 specifically addressed willingness by asking the students to what extent they agreed or disagreed with the statement: I am very willing to treat patients with autism. Questions were also asked to assess clinical practice by focusing on the two main components: the number of clinical experiences treating patients with special needs and the level of self-perceived clinical competence. Question No. 1 addressed clinical competence to treat patients with special needs by asking the students to what extent they agreed or disagreed with the statement: I have developed the clinical experience...
### TABLE 2

Comparison of Outcomes by Class Year

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Class of 2016 (recent grad) Mean (SD)</th>
<th>Class of 2017 (fourth year) Mean (SD)</th>
<th>Class of 2018 (third year) Mean (SD)</th>
<th>ANOVA p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. I have developed a clinical experience and knowledge on management of special needs/autistic patients through UCLA SOD special patient care rotation.</td>
<td>2.91 (1.00)</td>
<td>3.1 (1.05)</td>
<td>2.43 (0.86)</td>
<td>0.005</td>
</tr>
<tr>
<td>Q2. I know the clinical presentation, oral habits and appointment structure (short appointment with very little waiting time) of special needs patients.</td>
<td>3.5 (0.84)</td>
<td>3.27 (0.94)</td>
<td>2.82 (0.93)</td>
<td>0.001</td>
</tr>
<tr>
<td>Q3. I am aware of autistic behavioral profile.</td>
<td>3.31 (0.90)</td>
<td>3.45 (0.85)</td>
<td>2.85 (0.93)</td>
<td>0.003</td>
</tr>
<tr>
<td>Q4. I understand the importance of the role of oral health education in both dental professionals and of the special needs patient.</td>
<td>4.69 (0.54)</td>
<td>4.48 (0.63)</td>
<td>4.21 (0.88)</td>
<td></td>
</tr>
<tr>
<td>Q18. I am aware of the options available for treating special needs patients: the use of tell-show-do, positive reinforcements, desensitization, etc.</td>
<td>4.28 (0.68)</td>
<td>4.26 (0.63)</td>
<td>3.96 (0.90)</td>
<td>0.08</td>
</tr>
<tr>
<td>Q19. I know the effects of home-centered preparation that includes familiarization with dental instruments, teaching of skills required for the dental examination using phrases such as “open your mouth” and developing custom-made photo books to assist the child to get acquainted with the dental operatory room.</td>
<td>3.91 (0.86)</td>
<td>3.84 (0.90)</td>
<td>3.53 (0.94)</td>
<td>0.10</td>
</tr>
<tr>
<td>Knowledge composite score</td>
<td>3.77 (0.45)</td>
<td>3.74 (0.47)</td>
<td>3.32 (0.61)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Attitudes — Willingness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q7. Despite difficulty in patient compliance, I am very willing to treat autistic patients.</td>
<td>3.72 (0.99)</td>
<td>3.94 (0.81)</td>
<td>3.84 (0.94)</td>
<td>0.64</td>
</tr>
<tr>
<td>Q8. I take personal responsibility (academic, civil, ethical, moral) to meet the needs of special needs patients.</td>
<td>4.09 (0.89)</td>
<td>4.13 (0.81)</td>
<td>4.22 (0.76)</td>
<td>0.73</td>
</tr>
<tr>
<td>Q9. I would volunteer to participate in a program or in research to enhance my learning in special care.</td>
<td>4.16 (0.72)</td>
<td>4.10 (0.65)</td>
<td>4.01 (0.85)</td>
<td>0.67</td>
</tr>
<tr>
<td>Willingness composite score</td>
<td>3.99 (0.67)</td>
<td>4.05 (0.54)</td>
<td>4.02 (0.71)</td>
<td>0.93</td>
</tr>
<tr>
<td>Attitudes — Confidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q5. Treat special needs patients.</td>
<td>1.88 (0.75)</td>
<td>2.03 (0.80)</td>
<td>1.69 (0.74)</td>
<td>0.09</td>
</tr>
<tr>
<td>Q6. Treat autistic patients knowing that these patients have different clinical presentations and responses.</td>
<td>1.97 (0.74)</td>
<td>2.16 (0.82)</td>
<td>1.69 (0.72)</td>
<td>0.01</td>
</tr>
<tr>
<td>Q16. Practice pharmacological behavior management techniques on special needs patients (when to use nitrous oxide versus general anesthesia versus combination).</td>
<td>2.09 (0.93)</td>
<td>1.97 (1.02)</td>
<td>1.37 (0.57)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Confidence composite score</td>
<td>1.98 (0.70)</td>
<td>2.05 (0.75)</td>
<td>1.59 (0.64)</td>
<td>0.002</td>
</tr>
<tr>
<td>Other attitude questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10. I believe that treating special needs patients will allow one to develop additional skills in communication, teamwork and problem solving.</td>
<td>4.38 (0.75)</td>
<td>4.35 (0.71)</td>
<td>4.54 (0.55)</td>
<td>0.28</td>
</tr>
<tr>
<td>Q11. I believe in the efficacy of behavioral guidance.</td>
<td>4.53 (0.57)</td>
<td>4.52 (0.51)</td>
<td>4.31 (0.62)</td>
<td>0.11</td>
</tr>
<tr>
<td>Q12. There is a need for intrusive procedures such as restraints and sedation for special needs.</td>
<td>3.63 (0.87)</td>
<td>3.48 (0.81)</td>
<td>4.31 (0.62)</td>
<td>0.50</td>
</tr>
<tr>
<td>Q13. I believe that general anesthesia is more effective than desensitization.</td>
<td>3.16 (0.86)</td>
<td>3.16 (0.86)</td>
<td>3.29 (0.74)</td>
<td>0.66</td>
</tr>
<tr>
<td>Q14. The method of combining desensitization with general anesthesia should be practiced more in the clinic.</td>
<td>3.71 (0.74)</td>
<td>3.87 (0.78)</td>
<td>3.50 (0.75)</td>
<td>0.07</td>
</tr>
<tr>
<td>Q17. Systematic desensitization is effective in performing simple, in-office procedures such as prophylaxis, sealant placement and obtaining radiographs.</td>
<td>4.09 (0.78)</td>
<td>4.10 (0.93)</td>
<td>3.42 (0.97)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Q21. In addition to the special patient care rotation, having a separate clinical course on special needs patient care will be especially helpful.</td>
<td>4.38 (0.87)</td>
<td>4.03 (0.84)</td>
<td>3.89 (0.97)</td>
<td>0.048</td>
</tr>
<tr>
<td>Practice — Clinical experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q15. No experience (N, %)</td>
<td>13 (41%)</td>
<td>16 (52%)</td>
<td>68 (92%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>One experience (N, %)</td>
<td>10 (31%)</td>
<td>7 (23%)</td>
<td>3 (4%)</td>
<td></td>
</tr>
<tr>
<td>Two or more experiences (N, %)</td>
<td>9 (28%)</td>
<td>8 (26%)</td>
<td>3 (4%)</td>
<td></td>
</tr>
<tr>
<td>Practice — Clinical competency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q20. I have enough clinical and didactic hours in special needs patient care and feel prepared to treat these patients.</td>
<td>2.50 (1.04)</td>
<td>2.45 (0.89)</td>
<td>1.96 (0.96)</td>
<td>0.009</td>
</tr>
</tbody>
</table>

Most questions were scored: strongly agree=5, agree=4, neutral=3, disagree=2, strongly disagree=1.
Questions 5, 6 and 16: unconfident=4, somewhat confident=3, generally confident=2, very confident=1.
Question 15: no experience=0, one experience=1, two or more experiences=3.
### TABLE 3

Comparison of Outcomes by Experience Level

<table>
<thead>
<tr>
<th></th>
<th>No experience (N=97) Mean (SD)</th>
<th>One experience (N=20) Mean (SD)</th>
<th>More than one experience (N=20) Mean (SD)</th>
<th>ANOVA P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1. I have developed a clinical experience and knowledge on management of special needs/autistic patients through UCLA SOD special patient care rotation.</td>
<td>2.53 (0.90)</td>
<td>3.06 (1.00)</td>
<td>3.28 (1.07)</td>
<td>0.004</td>
</tr>
<tr>
<td>Q2. I know the clinical presentation, oral habits and appointment structure (short appointment with very little waiting time) of special needs patients.</td>
<td>2.95 (0.93)</td>
<td>3.35 (0.88)</td>
<td>3.47 (1.02)</td>
<td>0.03</td>
</tr>
<tr>
<td>Q3. I am aware of autistic behavioral profile.</td>
<td>2.99 (0.92)</td>
<td>3.05 (0.83)</td>
<td>3.65 (0.99)</td>
<td>0.02</td>
</tr>
<tr>
<td>Q4. I understand the importance of the role of oral health education in both dental professionals and of the special needs patient.</td>
<td>4.30 (0.81)</td>
<td>4.56 (0.76)</td>
<td>4.60 (0.60)</td>
<td>0.17</td>
</tr>
<tr>
<td>Q18. I am aware of the options available for treating special needs patients: the use of tell-show-do, positive reinforcements, desensitization, etc.</td>
<td>4.05 (0.83)</td>
<td>4.3 (0.73)</td>
<td>4.15 (0.81)</td>
<td>0.45</td>
</tr>
<tr>
<td>Q19. I know the effects of home-centered preparation that includes familiarization with dental instruments, teaching of skills required for the dental examination using phrases such as “open your mouth” and developing custom-made photo books to assist the child to get acquainted with the dental operatory room.</td>
<td>3.58 (0.95)</td>
<td>3.85 (0.75)</td>
<td>4.05 (0.89)</td>
<td>0.09</td>
</tr>
<tr>
<td>Knowledge composite score</td>
<td>3.43 (0.57)</td>
<td>3.70 (0.45)</td>
<td>3.89 (0.57)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Attitudes — Willingness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q7. Despite difficulty in patient compliance, I am very willing to treat autistic patients.</td>
<td>3.72 (0.94)</td>
<td>3.85 (0.81)</td>
<td>4.35 (0.75)</td>
<td>0.02</td>
</tr>
<tr>
<td>Q8. I take personal responsibility (academic, civil, ethical, moral) to meet the needs of special needs patients.</td>
<td>4.09 (0.80)</td>
<td>4.35 (0.81)</td>
<td>4.35 (0.75)</td>
<td>0.23</td>
</tr>
<tr>
<td>Q9. I would volunteer to participate in a program or in research to enhance my learning in special care.</td>
<td>4.03 (0.83)</td>
<td>4.05 (0.51)</td>
<td>4.25 (0.72)</td>
<td>0.52</td>
</tr>
<tr>
<td>Willingness composite score</td>
<td>3.95 (0.69)</td>
<td>4.08 (0.46)</td>
<td>4.32 (0.58)</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>Attitudes — Confidence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q5. Treat special needs patients.</td>
<td>1.66 (0.73)</td>
<td>1.95 (0.76)</td>
<td>2.4 (0.60)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Q6. Treat autistic patients knowing that these patients have different clinical presentations and responses.</td>
<td>1.7 (0.69)</td>
<td>1.85 (0.81)</td>
<td>2.65 (0.59)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Q16. Practice pharmacological behavior management techniques on special needs patients (when to use nitrous oxide versus general anesthesia versus combination).</td>
<td>1.51 (0.73)</td>
<td>1.8 (1.01)</td>
<td>2.35 (0.88)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Confidence composite score</td>
<td>1.63 (0.65)</td>
<td>1.87 (0.78)</td>
<td>2.47 (0.48)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Other attitude questions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10. I believe that treating special needs patients will allow one to develop additional skills in communication, teamwork and problem solving.</td>
<td>4.52 (0.56)</td>
<td>4.35 (0.81)</td>
<td>4.3 (0.80)</td>
<td>0.28</td>
</tr>
<tr>
<td>Q11. I believe in the efficacy of behavioral guidance.</td>
<td>4.35 (0.58)</td>
<td>4.55 (0.60)</td>
<td>4.55 (0.60)</td>
<td>0.20</td>
</tr>
<tr>
<td>Q12. There is a need for intrusive procedures such as restraints and sedation for special needs.</td>
<td>3.43 (0.84)</td>
<td>3.65 (0.67)</td>
<td>3.55 (0.89)</td>
<td>0.52</td>
</tr>
<tr>
<td>Q13. I believe that general anesthesia is more effective than desensitization.</td>
<td>3.25 (0.82)</td>
<td>3.35 (0.81)</td>
<td>3.00 (0.56)</td>
<td>0.33</td>
</tr>
<tr>
<td>Q14. The method of combining desensitization with general anesthesia should be practiced more in the clinic.</td>
<td>3.57 (0.76)</td>
<td>3.75 (0.72)</td>
<td>3.83 (0.79)</td>
<td>0.30</td>
</tr>
<tr>
<td>Q17. Systematic desensitization is effective in performing simple, in-office procedures such as prophylaxis, sealant placement and obtaining radiographs.</td>
<td>3.59 (1.01)</td>
<td>4.21 (0.79)</td>
<td>3.95 (0.76)</td>
<td>0.02</td>
</tr>
<tr>
<td>Q21. In addition to the special patient care rotation, having a separate clinical course on special needs patient care will be especially helpful.</td>
<td>4.01 (0.95)</td>
<td>4.05 (0.89)</td>
<td>4.15 (0.93)</td>
<td>0.83</td>
</tr>
<tr>
<td><strong>Practice — clinical competency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q20. I have enough clinical and didactic hours in special needs patient care and feel prepared to treat these patients.</td>
<td>1.97 (0.92)</td>
<td>2.5 (1.00)</td>
<td>3 (0.86)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
and knowledge of the management of patients with special needs or autism through UCLA SOD special patient care rotation. Question No. 15 asked the dental students about the number of clinical experiences they had in treating patients with special needs.

The study relied solely on self-report. All 21 questions except Nos. 5, 6, 15 and 16 were assessed with the five-point Likert scale and were coded as follows: $1 = \text{strongly disagree}$, $2 = \text{disagree}$, $3 = \text{neutral}$, $4 = \text{agree}$, $5 = \text{strongly agree}$. In this way, each response to a question had a numeric value. For example, “strongly disagree” was assigned a value of 1, “disagree” was assigned a value of 2, etc. A minimum of one point could be earned per question with a maximum of five. Once the responses were converted to numeric values, they were then averaged to create composite scores for knowledge, attitudes (comprised of willingness and confidence) and practices (comprised of the number of experiences and clinical competence).

For the three questions (Nos. 5, 6 and 16), a slightly different scoring method was used. The response categories were $1 = \text{very confident}$, $2 = \text{generally confident}$, $3 = \text{somewhat confident or neutral}$, $4 = \text{unconfident}$. A minimum of one point could be earned per question with a maximum score of four. Similarly, the responses were also assessed and compiled into a composite score. The reason for the switch from a five-point to a four-point scale was because it was more desirable to do so for these “level of confidence” questions. Rather than having a five-point scale that allowed for a neutral response, a four-point scale was used specifically because a neutral response was not important to the study and the study team decided that it would be better to evaluate the exact level of confidence of the responders. Prior to evaluating the measures by experience level, the responses to question No. 15 were regrouped into no experience (0), one experience (1) and two or more experiences (2). P-values of less than 0.05 were considered statistically significant.

ANOVA was used to determine if there were differences in KAP outcomes by class year or level of experience with the exception of level of experience, which was compared using the Chi-square test.

**Results**

The response rate of the survey was 54 percent (137/255). Below is the response rate by class year:

- Third-year students: 54 percent (74/137)
- Fourth-year students: 23 percent (31/137)
- Recent graduates: 23 percent (32/137)

More than half of the respondents were from third-year students. For the two questions addressing practices (Nos. 15 and 20), 54 percent of the responses were from third-year dental students who just started their clinic training at the time of the survey administration.

All three groups of respondents reported a moderate level of knowledge (range = 1–5, mean = 3.6; **TABLE 2**). More than a third of students (53/137) reported that they did not feel confident in treating patients with special needs. When comparing the responses by different class years, data showed a trend of greater knowledge, confidence and competence to treat patients with special needs with an additional year at school (p < 0.001, p = 0.002 and p = 0.009 respectively; **TABLE 2**). Despite this trend, the mean confidence and competence scores were low: 1.87 and 2.3 respectively, indicating that the students felt either not confident or only somewhat confident.

Despite many students feeling not confident treating patients with special needs, 65 percent (89/137) of the students reported that they are willing to treat patients with special needs despite difficulties treating them. The level of willingness to treat patients with special needs was not significantly correlated with class year (p = 0.93; **TABLE 2**) nor with the number of clinical experiences (p = 0.07; **TABLE 3**).

Three-quarters of the students also reported that they had very little clinical experience (either zero or one experience) treating patients with special needs. Those who did have clinical experience treating patients with special needs reported a higher perceived level of competence in treating patients with special needs (p < 0.001, **FIGURE 1**). We had four significant findings in this study:

1. The higher the number of clinical experiences treating patients with special care, the higher the perceived level of competence (p < 0.001, **FIGURE 1**, **TABLE 3**).
2. The higher the number of clinical experiences treating patients with special care, the higher the level of perceived confidence (p < 0.001, **FIGURE 1**, **TABLE 3**).
3. The higher the class year, the higher the perceived level of competence (p = 0.01, **FIGURE 2**, **TABLE 2**).
4. The higher the class year, the higher the level of perceived confidence (p = 0.002, **FIGURE 2**, **TABLE 2**).

**Discussion**

Research has shown that a majority of U.S. general dentists do not think that their dental education prepared them well to treat patients with special needs.\(^{19}\) The mean competence scores (Q20) of fourth-year dental students and recent graduates (mean = 2.5, most indicated disagree or neutral) were
low, indicating that the students felt unprepared when treating patients with special needs. Possible reasons why students felt unprepared when treating patients with special needs could be that there is a lack of clinical training opportunities provided to them, a lack of emphasis to train students to treat patients with special needs and possibly institutional barriers such as a shortage of faculty who are experts in the field of special needs care. In Waldman and Periman’s study of U.S. and Canadian dental schools, they found that almost three-quarters of the schools provided 5 percent or less clinic time for care of patients with special needs, which is an inadequate amount of time to prepare and train dental students to treat these patients.11

The level of competence was statistically significant with class year (p = 0.01; FIGURE 2 and TABLE 2) and with the number of clinical experiences treating patients with special needs (p < 0.001; FIGURE 1, TABLE 3). However, the competence scores of fourth-year dental students and recent graduates were 2.45 and 2.50 respectively (p = 0.01; TABLE 2), suggesting that the recent graduates who only had an additional year of clinic experience at the time of the survey did not necessarily have more opportunities to observe and treat patients with special needs compared to the fourth-year students. Fourth-year dental students and recent graduates also had minimal differences in their knowledge, attitudes and practice scores (FIGURE 2, TABLE 2). The data suggest that more didactic and clinical training is needed in special patient care from third to fourth year in the UCLA dental school curriculum. The results also underline the fact that dental students reported that they do not have sufficient clinical and didactic hours treating patients with special needs to feel adequately prepared.

With the increase in the number of clinical experiences that dental students had, there was an increase in mean scores of knowledge (p < 0.001, TABLE 3), attitudes (confidence, p < 0.001, TABLE 3) and practice (competence, p < 0.001; TABLE 3). Vainio’s research supports this finding as well. All of the dental schools that responded to his survey reported that their students gained experience in treating patients with special needs in “clinical settings,” again highlighting the importance of clinical experience.12 Vainio also found that dentists who had both didactic and clinic-based education with special needs patients during their predoctoral training felt more comfortable treating these patients and were more likely to provide special patient care.13 Thus, this data further reinforce the need for increasing clinical experiences with patients with special needs.

Approximately 52 percent (16) of the fourth-year dental students and 41 percent (13) of the recent graduates at UCLA reported that they had never provided any treatment for patients with special needs, again highlighting the lack of clinical experiences that these dental students received during their two years of clinical training. Of the respondents, 86 percent either strongly agreed or agreed to the statement that they would volunteer to participate in a program or in research to enhance their learning in treating patients with special needs. Of the respondents, 81 percent either strongly agreed or agreed to the statement that in addition to a special patient care rotation, having a separate clinical course on special needs patient care would be especially helpful. These results show the willingness and determination of the dental students to learn to appropriately treat and care for patients with special needs.
One limitation of this study was that it was all self-reported. Additionally, the low number of responses for the fourth-year dental students and recent graduates as compared to the third-year dental students also provides a skewed comparison between class years; however, there were no changes in the curriculum between each year, eliminating this as a possible source of bias. There may be an issue of social desirability bias such that there may be underreporting of the lack of confidence to treat patients with special needs or overreporting of willingness to treat patients with special needs. There is also the possibility of recall bias by the respondents. The dental students and recent graduates were only given one week to respond to the survey. Perhaps a longer response period could have increased the response rate. Another limitation of this study is that this is a convenience sample. These results may not be generalizable. Further research is warranted with a larger sample and comparable research at other U.S.-based and foreign dental schools to validate these results.

The quality of dental education and clinical training in treating patients with special needs will have an impact on future dentists’ knowledge, attitudes and practice styles when treating patients with special needs. By increasing students’ clinical experiences treating patients with special needs, we hypothesize that students will be more confident to treat patients with special needs once they are in professional practice, thereby helping to ameliorate the problem of access to dental care for patients with special needs. As a follow-up to this study, we suggest that UCLA dental faculty be surveyed to gain their perspectives on increasing special patient care training. Future research is also needed in deciding the best way to educate dental students clinically. For example, creating a designated clinical area for patients with special needs and providing dental students with clinical training in hospital settings. Additionally, we recommend that dental schools increase efforts to establish valuable community partnerships with schools/agencies that provide services to people with disabilities such as local regional centers.

Conclusion

This pilot study showed that there is a need for enhancement of the current UCLA predoctoral dental school curriculum and practicums to increase clinical experiences for dental students to treat more patients with special needs. The significant positive relationships observed in this survey between the number of clinical experiences treating patients with special needs and dental students’ level of confidence and competence to treat these patients strengthens this suggestion. Maybe this could be achieved with further development of interprofessional training and practices with emphasis on medical/dental integration. Perhaps the UCLA predoctoral dental school curriculum may implement some of the successful curriculum experiences of the UCLA postdoctoral education specialty programs.

The UCLA predoctoral students were chosen as a study pilot cohort for this research; however, we suspect that this might be a common problem in other dental schools in the U.S. and globally. This pilot study warrants further research to compare the findings to other U.S.-based and foreign dental schools and to evaluate the impact of additional clinical training provided in dental schools and the future dentists’ preparedness and willingness to provide quality care for patients with special needs.

ACKNOWLEDGMENTS

Special thanks to Donna Kritz-Silverstein, PhD, and Holly Wilhalme, M5, for their vital assistance and support for this project. This research was supported by a UCLA CTSI science summer fellowship grant.

REFERENCES


THE CORRESPONDING AUTHOR, Haejin Kang, BS, can be reached at hks24@ucla.edu.
LOS ANGELES COUNTY


ENCINO - GP w/ 4 eq ops in a med bldg. Has 3 eq ops & 2 plmbd not eq ops. Grossed $488K in 2017. Property ID #5210.0


MONTEBELLO—GP located in a free standing building w/ 5 eq ops in a 1,087 sq ft suite. Located on a corner location. Has 8 equipped ops and 3 chairs in open bay. Grossed approx. $352K. NET $141K. Property ID #5219.

PASADENA— GP located in a medical building w/ 2 eq ops in a 2,100 sq ft suite. Located in a 2 story professional building. Has been known as a icon in the community for 43 yrs. Property ID #5218.


SANTA ANA— COMING SOON! Long established practice. PPO & Cash only. Gross approx. $500K.

SANTA MARIA— GP located in a multi story building w/great views to the mountain. Fee for service. Prop. ID #5216.

SANTA MONICA— GP located in a one story free standing building with 8 eq ops. Has the latest technology. Grossed approx. $265K. Property ID #5202.

SAN DIEGO COUNTY

LA MESA— GP located in a medical building w/ 5 eq ops & 1 plmbd not eq. Sees 80-100 new patients/mo. Grossed $1.5M in 2017. Net $368K. Property ID #5228.

OCEANSIDE— Ortho Coming Soon!

SAN DIEGO— GP located in a medical building w/ 3 new eq ops in a 1,087 sq ft suite. Grossed $284K. NET $148K. Property ID #5200.


RIVERSIDE & SAN BERNARDINO COUNTIES
BANNING—[HP & Equipment only] Consists of 3 eq ops in a 925 sq ft suite. Property ID #5184.


CORONA— Beautiful GP w/ 6 eq ops / 4 plmbd not eq for expansion in a 3,700 sq ft office. Located on a one story free standing building next to a busy shopping center. Grossed $346K in 2017. Great potential for a full time dentist. Property ID #5224.

DESERT HOT SPRINGS— GP + Real Estate!! Two partners one office has 4 eq ops / 1 plmbd not eq. Est. in 1986. Property ID #5208.

FONTANA— GP + Real Estate!! Premier office with 50 yrs of goodwill in a 1,123 sq ft bldg with 8 eq ops. Has the latest technology. Grossed approx. $2.3M in 2016. Net of $968K. Property ID #5140.


COMING SOON
Downey, Irvine, Laguna Hills, Lancaster and Orange

Visit our Website and Social Media pages for Practice Photos and Videos

CONTACT US FOR A FREE CONSULTATION
WWW.CALPRACTICESALES.COM
Phone: (800) 697-5656
Providing top-notch dental care goes far beyond clinical expertise. It takes the contribution of each team member to create a positive patient experience. But if practice owners fail to educate their team members on their roles, responsibilities and limitations, that positive experience can quickly turn negative. And that negative experience can potentially create a professional liability claim.

The Dentists Insurance Company reports a case in which a patient presented for veneers on teeth Nos. 5–12 and 21–28. Although the patient needed treatment on her posterior teeth, she insisted on addressing the anterior teeth first so that she could have a new smile by her daughter’s wedding, which was to be in a few weeks. Against his better judgment, the dentist agreed to rushing the treatment as the patient was so insistent. He prepared and temporalized 16 teeth in one visit and seated the permanent veneers 10 days later. Initially, the patient appeared to be happy with her new smile. Because she was running late for another appointment, she left the office hastily without allowing enough time for adjusting her occlusion or taking any intraoral photographs. She promised to return after her daughter’s wedding when she had more time.

The patient failed her follow-up appointment but returned a month later complaining of sensitivity throughout her mouth. The dentist was able to see her right away, performed an occlusal adjustment and recommended seeing her again in two weeks. Three days later, she came in for her hygiene appointment and requested another occlusal adjustment. The staff informed her that the dentist wasn’t in the office and offered her an appointment the following day. The patient was upset and left without scheduling the next-day appointment.

Several days later, the patient called to report persistent pain and sensitivity. Rather than alerting the dentist, the front office staff told the patient that it was normal to feel pain and sensitivity following such procedures and advised her to wait until the follow-up appointment with the dentist, which was in a week. The patient emailed the office the following day requesting to be seen sooner. Staff responded to her email, letting her know that they did not have any available openings.

Frustrated with continued pain and sensitivity along with lack of attention from the dentist, the patient requested her records and sought a second opinion. She reported that the new dentist diagnosed 10 teeth as needing root canal treatment due to excessive removal of tooth structure during the veneer preparations. She also informed the office that they would be hearing from her.

Depending on Staff To Manage Patients? Educate Them First

TDIC Risk Management Staff

You are not a sales goal.

You are a dentist deserving of an insurance company relentless in its pursuit to keep you protected. At least that’s how we see it at The Dentists Insurance Company, TDIC. Take our Risk Management program. Be it seminars, online resources or our Advice Line, we’re in your corner every day. With TDIC, you are not a sales goal or a statistic. You are a dentist.

Protecting dentists. It’s all we do.®

800.733.0633 | tdicinsurance.com | CA Insurance Lic. #0652783
attorney. The office subsequently received a letter from an attorney representing the patient alleging the failure to treat properly resulting in the need for endodontic treatment. The demand included a full refund of the treatment fees along with payment for future dental treatment and pain and suffering.

In this case, the breakdown occurred when the staff member failed to alert the dentist that the patient wanted to be seen sooner due to continued symptoms. The staff member took it upon herself to reassure the patient that her symptoms were normal and she would have to wait to be seen. In doing so, she took on the role of a licensed dentist, thus putting the practice at risk. Had the staff member notified the dentist of the patient’s concerns, the negative patient experience would have been avoided and the outcome may have been much different.

TDIC reminds practice owners that while empowering staff to make decisions is important for the smooth operation of a practice, staff must be educated on professional liability issues and associated risks. Training, procedures and protocols for risk management are essential to staff members understanding their legal limitations. The following can help reduce your risk:

- Conduct a risk management assessment. Evaluate the awareness level of staff members and routinely conduct mock situations to determine how staff may respond.
- Develop written policies, procedures and protocols addressing risk management and liability and train staff on their implementation.
- Build a risk management resource library that includes your state’s dental rules and regulations, samples of appropriate documentation and a guide to dental terminology and abbreviations.
- Don’t rely on staff to communicate with unhappy patients. Instruct them instead to inform you of any patient complaints. Follow up with patients directly.

Before depending upon your staff to manage patients, make sure they know what they can and cannot do, what their limitations are and what guidelines and protocols they must follow. Practice owners are ultimately held responsible for any decision and action that takes place within their practice.

Each member of your team is an extension of your practice and a representation of your office philosophy. A team approach ensures coordination, communication and continuity of care among everyone involved. Just as the doctor-patient relationship affects a patient’s course of treatment and satisfaction, so do relationships among dental staff. Ensuring every staff member is properly trained on issues relating to liability can help mitigate your risk. Staff feel empowered and supported when their roles and responsibilities are clearly outlined. They are more confident in their decisions when they clearly know when to handle issues themselves and when to refer to the practice owner for guidance.

When looking to invest in professional dental space, dental professionals choose

**Linda Brown**

- 30 years of experience serving the dental community
- Proven record of performance
- Dental office leasing and sales
- Investment properties
- Owner/User properties
- Locations throughout Southern California

**For your next move, contact:**

Linda Brown
Linda@LDMcommercial.com
(818) 925-5041

To schedule a confidential consultation with an experienced risk management analyst, visit tdicinsurance.com/RMconsult or call 800.733.0633. TDIC’s Risk Management Advice Line is a benefit of CDA membership.
4159 SANTA ROSA GP  Dedicated practitioner retiring from practice with emphasis on Restorative care. 2,330 square foot office with 5 ops. 4 doctor-days per week and approximately 1,000 active patients and average Gross Receipt of $733K+. Asking $557K.

4225 EUREKA GP & BUILDING  Established since 1981 in charming Northern California port city. Retiring doctor is offering practice and building. Practice has approximately 1,200 active patients with new patients accepted on a selective basis. Average Gross Receipts of $765K+ with 61% average overhead. Beautiful 1,400 square foot office with four (4) fully-equipped operators. Asking price for practice $468K.

4216 SIERRA NEVADA FOOTHILLS  23 year practice located in the heart of the Sierra Nevada foothills in modern building close to downtown area. 1,024 square foot office with 4 fully-equipped ops., upgraded major equipment and digital radiography. Average Gross Receipts $890K+ with 56% average overhead. Asking price for practice $604K. Seller is offering real estate for sale to the buyer of his practice.

4232 SF GP  Seller offering 26+ year general practice in SF Financial district. Ground floor office with high volume foot traffic. Approx. 1,200 sq. ft. facility with 4 fully-equipped ops. $930K+ avg. annual GR. Seller willing to help for a smooth transition. Asking $640K.

4178 SONOMA COUNTY PERIO  Seller retiring from 21 year practice with trained, seasoned staff and great location. Exceptional 2,100 sq. ft. ample office with 6 fully-equipped ops. Majority of equipment purchased in 2002. 4 doctor-days & 3 hygiene days per week. Average gross receipts $1M+. Asking $677K.

4198 NORTH BAY PERIO  Established Periodontic practice with loyal referral sources in 1,564 square foot office with 5 fully-equipped operators. Average Gross Receipts $480K. Office also for sale to the buyer of the practice. Asking price $284K.

4191 SONOMA COUNTY ENDO  Seller retiring from 38 year endodontic practice located in attractive ground floor office (remodeled in 2011) with updated modern equipment and cabinetry. Close to several regular referral sources. Doctor sees an average of 7-8 patients per day. 5 year average Gross Receipts $700K+. Asking $447K.

4210 UNION CITY GP  Retiring GP offering 40+ years of goodwill. 5 ops in 1,100 sq. ft. 350 active patients, all fee-for-service. 2 yr average GR $177K. Asking $85K.

4202 SANTA CRUZ COUNTY GP  Retiring seller offering 40+ years of goodwill with emphasis on restorative care. Asking $308K.

4196 PACIFIC HEIGHTS SOLO GROUP  Individual SP within established successful group in a modern fully-equipped office with well trained personnel. Approximately 1,400 active patients with an average of 10 new patients per month. Asking $423K.

4172 NAPA GP  Amazing opportunity to own the practice of your dreams in one of the world’s premier wine destinations! Situated in a prime neighborhood close to many amenities. 1,200 square foot office with 4 fully-equipped and updated operatories. Over 1,000 active patients. Average annual gross receipts over $700K. Asking price for practice $484K. Building available for purchase.

4219 SANTA CRUZ FACILITY  Great dental facility close to several amenities and minutes to HWY 17 and HWY 1. Plenty of parking and great street visibility. Located in a dental office in 1,200 square foot facility with 3 fully-equipped ops. Asking $50K.

4192 REDWOOD CITY GP  Profitable, established, general practice available, now, in rapidly growing Redwood City. Over 1,000 active patients & a 5 year average Gross Receipts of $890K net. Beautiful re-modeled handicap accessible office with 4 fully-equipped ops. Asking $636K.

4230 MORGAN HILL GP  Well-established GP offering 30+ years of goodwill in very desirable suburb of Silicon Valley. Asking price $199K.

4215 SILICON VALLEY ENDO  Practice in prime Silicon Valley location with 40+ loyal referral sources. 900 square foot office in modern professional center with 2 operators. Averaging 20 new patients per month. Long term staff. 2017 gross receipts $603k. Asking $399K.

4217 WEST SAN JOSE GP  Seller retiring, offering 35+ years of goodwill in well-established practice with loyal staff and stable patient base. 10-15 new patients a month. Office accepts Delta PPO and Premier. Excellent location on busy thoroughfare near O’Connor Hospital in desirable West San Jose neighborhood. 3 fully equipped ops in 1,150 sq. ft. office. GR (2 yr average) $773K with adj. net (2 yr average) $256K. Asking $509K.

4248 MENLO PARK FACILITY  Remodeled, 930 sq. ft. dental facility with 2 fully equipped ops. and plumbed for 2 additional ops, reception area, doctor’s office, sterilization, lab, storage and restroom. Medical/Dental building in highly desirable location. Asking $200K.

4237 SAN JOSE GP  Busy general practice in state-of-the-art 1,500 sq. ft. office with 5 fully-equipped operators. Approx. 1,900 active patients and approx. 19 new patients per month. Average Gross Receipts $1.3M+. Asking TBD.

4246 SUNNYVALE GP  Retiring seller offering a well est. general practice with loyal staff in organized office with 3 fully-equipped ops. Located in highly desirable neighborhood. 2017 Gross Receipts $540K+ with 4 doctor days. Asking TBD.

UPCOMING: MID-PENINSULA GP & GILROY GP
Northern California Office
1.800.519.3458
www.henryscheinp.com

Southern California Office
1.888.685.8100

Making your transition a reality.
A failure to provide a patient with access to their health record is the third-most frequently investigated HIPAA complaint since implementation of the law in 2003 through Jan. 31, 2018, according to the U.S. Department of Health and Human Services Office for Civil Rights (OCR). OCR received more than 173,000 complaints in that period. Although the state of California does not track such complaints, CDA often hears from dental practices that a new patient is unable to obtain a copy of records from their previous dentist. Reasons cited by these patients include having an outstanding bill or being forced to pay in full for a procedure for which the patient utilized a promotion the dental practice offered, for example free X-rays.

No dental practice may deny a patient access to their dental records except in very limited situations. A dental practice cannot deny access due to an outstanding bill or because the patient took advantage of a promotional price. When a patient requests to view or obtain a copy of their dental records or a parent or legal guardian requests a dependent’s records, a dental practice must comply. In order to prevent a patient from filing a complaint against a dental practice with OCR or with the dental board, it is best for dentists and their staff to understand the rules for providing patients with access to their records.

What parts of a patient record does a patient or patient’s legal representative have a right to access?

Any information that relates to the patient’s treatment or payment for that treatment must be made available to a patient or patient’s legal representative if requested. This includes a dentist’s notes, radiographs, photographs and models and any other information related to patient treatment, even if the information originated with a different dental practice or health care provider.

Does a noncustodial parent have a right to access their minor child’s records?

In general, a parent is entitled to access their minor child’s health
information even when parents are divorced or separated and a parent is not the primary caretaker or is not responsible for paying for the child’s treatment. Practice staff should verify with the primary caretaker any court order limiting a parent’s access to their child’s information and, if so, request a copy of the order. In this circumstance, the practice should also limit sharing payment information to amount incurred, amounts paid and dates of each occurrence.

What are the rules if a patient wants to inspect their records?

State law requires that a dental practice allow the requested records to be viewed within five working days of receiving a written request from the patient. A dental practice may ask the patient to specify dates of records to be inspected. The inspection of the records should take place during business hours, and it is advisable to have an employee present in the room while the records are reviewed.

The patient or patient representative is allowed to have one other individual present during the record review. If, during or after the review, the patient requests a copy of the records, state law allows up to 15 days to provide the patient with the requested copy.

What are the rules if a patient wants a copy of their records?

A request to access records is not required by law to be in writing. However, if a dental practice requires a patient to submit an access request in writing, the practice’s HIPAA Notice of Privacy Practices must include this requirement. A practice may accept requests from a patient in-person or via email, fax or handwritten letter in lieu of a form. Reasonable steps must be taken to verify the identity of the requestor. If the requestor is a patient representative, verify identity and the legal standing of the individual. A patient representative is a person who, under the authority of state law, can make health care decisions for an individual. A social worker is one example of a patient representative. Another example of a patient representative is a deceased patient’s beneficiary or executor.

Provide the copy to the requestor within 15 calendar days of receiving the request. The copy must be in the format (hard copy/digital) requested by the patient if it is feasible.

What is a dental practice allowed to charge when providing a copy of records?

Both HIPAA and state law place limits on what a patient can be charged for a copy of records. The charge should not be any more than what it costs the practice to produce the copy. If charging for a copy, the practice must provide patients with a list of fees and should provide a cost estimate based on the scope of the request. The actual cost of duplication, time to duplicate material, material cost and postage may be recouped through fees. A HIPAA-covered entity may not ask payment for the costs of requesting verification, retrieving information or maintaining information systems.

Paper copy: The dental office may collect from the patient no more than 25 cents per page, or 50 cents per page for copies made from microfilm, plus any additional reasonable clerical costs incurred in copying the records. Allowable charges include the cost of copying X-rays and postage if the patient requests receipt by mail.

Electronic copy: The fee charged for an electronic copy may include the cost of the electronic media (for example, CD or flash drive) on which to copy the information and the cost of labor to make the copy or transmit the information. OCR does allow a covered entity to charge a flat fee for each request for an electronic copy of records provided the flat fee does not exceed $6.50. This option works well for dental practices that do not want to go through the process of calculating actual or average allowable costs to produce electronic copies. If a dental practice chooses to calculate costs each time to set a fee, the $6.50 is not the limit of what can be charged.

The electronic copy may be transmitted via unencrypted email to the patient only if the patient consents to receiving the information in this manner after being informed of the risks of unsecure communications; this informed consent must be documented.

Public Benefit Program Appeal: If a patient requires a copy of a portion of his or her record to support an appeal regarding eligibility for a public benefit program, such as Denti-Cal, the copy shall be provided by the dental office at no charge. Allowable charges: The patient is entitled to no more than one copy free of charge but may not be limited in the number of requests for copies.

What do I tell a patient who thinks his records belong to him?

The information and images in a patient record are the work product of the dental practice and belong to the practice. Both HIPAA and state law recognize a patient’s right to have access to the information in their health record. Both HIPAA and state law limit what a health care provider can do with patient information and in many situations require a provider to obtain the patient’s authorization to use or disclose information for nonpayment or nontreatment purposes.
6143 BERKELEY’S ALTA BATES MEDICAL VILLAGE  Perfect opportunity for nearby Delta Premier Dentist to relocate their practice into this stand-alone building on Webster St. On 3-day week, collections totaled $550,000 in 2017. 4-days of Hygiene saw 1,558 hygiene appointments last 12-months. 4-ops. Great location. Condo optional purchase.
6141 NORTH NAPA VALLEY  3-day per week Delta PPO practice. 3-days of Hygiene. 2017 Collected $359,000. Attractive 3-op office. 15 new patients per month. Full price $150,000.
6140 SAN RAFAEL  Dentist retiring after long career. Delta PPO provider. Has averaged $390,000 in annual collections on 26.5-hour week. $223,000+ in Profits in 2017. Full Price $125,000.
6139 SF BAY AREA PROSTHODONTIC PRACTICE  Very strong pedigree. Well positioned for the future. Excellent platform for younger Prosthodontist. “Out-of-Network”! 2017 billed $1.2 Million and collected $1.19 Million. 4-days of Hygiene. Owner can work back to help assist with transition.
6138 SILICON VALLEY  Phenomenal opportunity shall secure a rewarding career. Best technology, perfectly designed suite and desirable family community. Best location. Beautiful office. Adec equipped. Female DDS grossing $325,000. 3-ops. Full Price $125,000.
6136 SAN RAMON  Strong foundation. Collections for 2017 totaled $575,000. And this part-time schedule averaging 2.5-days a week. 3-ops. Seller can work back 1-day a week for transition.
6135 SONOMA COUNTY’S Rohnert Park 2017 collected $1,067,000 reflecting nice growth over 2016 which collected $940,000. Available Profits exceeded $500,000 for the second year in a row. Six days of Hygiene. There shall be no change in fees for the Successor. New homes being built nearby. Great family area.
6129 FOSTER CITY  Wish to infuse your practice with quality patients? “Out-of-Network” practice collected $500,000+ in 2017 on part-time schedule. Seller and Hygienist shall relocate into Buyer’s practice to transition patients. Full Price $100,000.
6122 SANTA CLARA - STARBUCKS “LIKE” LOCATION! Best exposure in beautiful strip center on El Camino Real. Office just remodeled. 5-Ops. This Delta PPO practice is currently trending $1+ Million in Collections on 4-days. Perfect platform to operate 6-days a week. Wants to do $1.5+ Million
How can I assist a patient whose former dental practice will not provide a copy of their record?

Direct the patient to the “Patient Records” oral health fact sheet under the Public Resources tab on cda.org. The patient can include a copy of the fact sheet when submitting a written request for records to the former dental practice and can encourage the other practice to contact CDA about the information on the fact sheet.

“Patient Request to Access Records Form and Q&A” is available on cda.org/practicesupport.

RESOURCE

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 benefits plans and regulatory compliance.
With scores of Buyers, profiles of their practice interests and financial ability, **Lee Skarin & Associates** is able to find the right buyer for your practice.

*Experience the difference. Call Lee Skarin and Associates for responses to all of your questions - No obligation!*

BAnty of A Special: Over $34.5 M in 2017 sales Exposure allows Broker in Northern California Better Price

**BA NTY AREA**

**AC-624 SAN FRANCISCO:** Wonderful patients, solid income in great stand-alone bldg $475k

**AC-782 SAN FRANCISCO:** Well maintained, multi-level Prof Medical Complex. 1450 sf w/ 5 ops $225k

**AG-852 SAN FRANCISCO:** Prime Location! 600 sf w/ 2 fully equipped, computerized ops $375k

**AN-752 SAN FRANCISCO Facility:** 2 months Free Rent! Opportunities like this one are few and far between! 1007sf w/ 4 ops. $79k

**AN-864 SAN CARLOS Lease:** “Turn-Key” Dental Office for Rent w/ Equipment! Ideal for a specialist! 2 op + 1 add'l. $6,500 mon.

**BC-710 WALNUT CREEK:** Desirable location, stand-alone, single-story bldg. 1313sf w/ 3 ops $150k

**BC-741 DANVILLE (FACILITY):** Move in Ready facility to build the practice of your dreams! ~ 1600sf w/ 3 fully equipped ops $150k

**BC-789 OAKLAND (FACILITY):** Perfect layout for Pedo or Ortho. 2800 sf w/ 6 fully equipped ops. Plumber for 2 add'l $135k

**BC-793 BERKELEY:** 2-story Prof Bldg. 1382 sf w/ 4 ops & professionally designed for flow $475k

**BG-734 ANTILOCH:** The perfect place to work, live and play! Located in desirable professional neighborhood. 1,323 sf w/ 4 ops. $315k

**BG-838 HAYWARD:** If Alameda County is where you want to be, then THIS is the practice for you! 800sf w/ 2 ops. $125k

**BG-839 PINOLE:** Sink your roots into this community which retains many “turn-of-the-century” buildings! 1212sf w/ 3 ops + 1 add'l. $350k

**CC-798 PETALAUMA:** Partially equipped dental office for lease. Only $2500/mo for 1400 sf!

**CC-802 SANTA ROSA:** Retail shopping center w/ 1200 sf and 4 fully equipped ops $220k

**CC-846 SAN RAFAEL:** Prof/Retail Building Complex. 3 ops 640 sf Collections $433k in 2017 $295k

**CG-616 NAPA:** State-of-the-Art practice. Seller moving out of state! $425k

**CG-859 SONOMA:** On track to collect over $700k in 2018! 2000sf w/ 4 ops FFS Practice $395k

**CN-829 MILL VALLEY:** This once-in-a-lifetime opportunity awaits your drive, talent & skill! 1200sf w/ 3 ops + 1 add'l $310k

**DC-812 REDWOOD CITY FACILITY:** 740 sf w/ 3 fully equipped ops $85k

**DG-833 GILROY:** Newly renovated, excellent visibility and easy accessibility lends to growth! 1200 sf w/ 4 ops $235k

**EN-861 SAN JOSE Charts Only:** Wonderful patients, “Turn-Key” Dental Office with pro Data Base in one bold Move with this Chart opportunity awaits your drive, talent & skill! 1100sf w/ 3 ops + 1 add'l $150k

**EN-882 FREMONT:** Imagine being able to live, practice and play here! 3200sf w/ 10 ops $395k

**EN-857 SAN JOSE:** Do the math - this associate-driven practice with profitability consistently! 1709sf w/ 5 ops $595k

**DN-806 WATSONVILLE:** This quality, family-oriented practice thrives $ focuses on delivering quality care. 1,182 SF w/ 4 ops $480k

**DN-885 FREMONT Office:** Build your dream Practice! Primed for success in this proven location! 1800sf w/ 3 ops + 2 add'l. $100k

**DN-861 SAN JOSE Charts Only:** Increase your Patient Data Base in one bold Move with this Chart Only Sale! $40K

**NORTHERN CALIFORNIA**

**EC-729 GREATER SACRAMENTO AREA:** Seller retiring! FFS Practice and Real Estate Available!

**EN-664 SACRAMENTO Facility:** Great corner location, excellent visibility & easy access! 2300sf w/ 4 ops. Now Only: $30k

**EN-747 CITRUS HEIGHTS:** Be the only dental office in this attractive, popular Retail Shopping Center! 2200sf w/5 ops + 6 add'l. $75k

**EN-749 LINCOLN:** Come sink your roots down and enjoy a fantastic lifestyle which can’t be beat! 1877sf w/4 ops + 1 add'l. $320k

**EN-755 FOLSOM:** A perfect location, envied by all! Enjoy an amazing quality lifestyle in this thriving city. 1200sf w/ 4 ops. $175k

**EN-791 SO. SACRAMENTO CO:** Highly esteemed practice to an adoring & appreciative patient base! 1950sfw/ 5 ops. $450k

**800.641.4179**

**WPS@SUCCEED.NET**
Over $34.5M in 2017 sales

Candidate california largest better better

DC-812 REDWOOD CITY Facility:
CN-829 MILL VALLEY:
CC-846 SAN RAFAEL:
CC-802 SANTA ROSA:
BG-839 PINOLE:
BG-838 HAYWARD:
BG-734 ANTIOCH:
BC-789 OAKLAND (Facility):
AN-864 SAN CARLOS Lease:
AN-752 SAN FRANCISCO Facility: 2 months Free Rent!
AG-852 SAN FRANCISCO:
AC-782 SAN FRANCISCO:

$235k
800.641.4179       WPS@SUCCEED.NET "ASK THE BROKER"

$125k

$310k
$135k
$425k
$150k
$350k
$295k
$475k

DN-771 SOQUEL Facility:
DG-844 SAN JOSE:
EN-791 SO. SACRAMENTO CO:
EN-755 FOLSOM:
EN-749 LINCOLN:
EN-747 CITRUS HEIGHTS Facility:
EN-664 SACRAMENTO Facility:
FN-754 SO. HUMBOLDT:
GC-472 ORLAND:
GN-746 YUBA CITY:
HN-740 SHASTA CO:
HG-851 SO LAKE TAHOE:

Imagine living in a peaceful, rural town that has an ideal climate and “big city” amenities less than an hour away. 1400 sf w/ 4 opps $350k

HC-827 SO. LAKE TAHOE: Ski, live, play and practice here where your lifestyle can’t be beat! 1200sf w/ 3 opps $310k

HG-851 SO. LAKE TAHOE: Don’t wait another day to start living your dream of a serene lifestyle! 2100 sf w/ 5 opps $425k

HN-618 SIERRA FOOTHILLS: Seller Retiring! Huge opportunity for growth by increasing office hours! 750sf w/ 2 opps $65k

HN-740 SHASTA CO: Beautiful mountain community, well-established practice, exceptional long-term staff. 2400+sf w/5 opps + 1 add’l. $475k/
Real Estate $350k

HN-773 SUTTER CREEK: Seller Motivated! Location known for beautiful scenery, excellent wine & rich history! 1536sf w/4 opps + 1 add’l! $175k

HN-816 CHESTER/ALMANOR AREA: The perfect place to work, live and play! Don’t hesitate, or this practice will be gone! 1250 sf w/ 4opps. Practice $140k/ Real Estate TBD

CENTRAL VALLEY

JC-468 SAN JOAQUIN VALLEY: High-end restorative practice! 6 opps in 2500+sf office. Call for Details! $425k

IG-832 OAKHURST: Have you ever dreamed of living and practicing by beautiful mountain ranges, surrounded by nature? 2048sf w/3 opps + 1 add’l. $235k/ Real Estate 375k

IN-764 STOCKTON: Well-established, fully computerized, paperless, digitalized practice just waiting for your talent & skill! 5,000sf w/10 opps $267.5k

IN-830 LODI: Start living the life! Small town charm, stable patient base & low overhead! 1,550 + 800sf w/4 opps. $360k, Real Estate $300k

JC-811 FRESNO COUNTY: Amazing Opportunity! Considerable Goodwill in Community! 3,000 sf w/ 6 opps $350k

JC-823 LOS BANOS: Unique opportunity. Heavy emphasis on hygiene. Growth potential by increasing DDS days. 1000 sf w 3 opps $80k

JG-778 FRESNO: What a steal. Consistent collections over $600k with cash flow over $300k!! 1452 sf w/ 4 opps $275k

JG-807 FRESNO: Reasonable Overhead, Stellar Reputation, Excellent Location! 1000 sf w/3 opps $158k

SOUTHERN CALIFORNIA

KG-779 SAN CLEMENTE Ortho: Huge growth potential by expanding relaxed work week! 2896 sf w/ 6 open bay chairs $325k

SPECIALTY PRACTICES

BC-784 CENTRAL CONTRA COSTA CO Perio: Seasoned Staff. Office runs like well-oiled machine! 3 opps $395k

BG-843 WALNUT CREEK Perio: Collections over $1M! Desirable area w/20-30 new pts per month. Professional building on major thoroughfare $645k

BG-826 ROSEVILLE Perio: Create your success story with this warm and caring, patient-centered practice! 1000sf w/3 opps + 1add’l $150k

EN-822 SACRAMENTO PERIO: Live, practice & play here! It’ll be the BEST decision you’ll ever make! 1700sf w/4 opps + 1 add’l. $395k

EN-821 GREATER SACRAMENTO AREA Perio: Well-established, fully computerized, paperless, digitalized practice just waiting for your talent & skill! 5,000sf w/10 opps $267.5k

EN-821 SACRAMENTO Perio: This practice is known throughout Sacramento for its stellar reputation! 2200sf w/5 opps + 1add’l. $840k

IG-910 SANTA CLARA PERIO: This practice is known throughout Santa Clara for its stellar reputation! 2200sf w/5 opps + 1add’l. $840k

IC-543 CENTRAL VALLEY Ortho: 1650sf w/ 5 chairs in open bay & plumbed for 2 add’l. Strong referrals and PT base $125k

IG-757 VISALIA Perio: Keep implants in house and imagine the growth possibilities! 9 hygiene days per week! Rare Gem! 2,000 sf w/ 5 opps Reduced Price: $350k

“Ask the Broker” can now be found at WWW.WESTERNPRACTICESALES.COM
A look into the latest dental and general technology on the market

**Form 2 3D printer**
($3,350 to $4,999 per month, Formlabs Inc.)

Dentistry has long been entrenched in the 3D technology arena through tools like CAD/CAM restoration systems, cone beam CTs and clear aligner therapy. When the first commercially available desktop 3D printer debuted in 2009, our field wasted no time in dreaming up applications for this nascent technology. By 2027, 3D printing in dentistry is expected to become a $9.5 billion market. As the cost for this technology decreases, print resolution increases and applications expand, practices are evaluating which of the multitude of printers on the market can best address both clinical uses (e.g., printing implant surgical guides, provisional resin restorations and aesthetic mock-ups) and laboratory uses (e.g., printing casts and dyes). Biocompatibility, part quality, print speed — these three critical qualities largely dictate which 3D printer makes it into a dental practice and the Form 2 by Formlabs has been the printer of choice for dental applications.

This second generation of printers by Formlabs utilizes a technology called stereolithography (SLA) to produce its parts. The Form 2 is capable of printing a layer at 25-micron thickness; its laser spot diameter is 140 microns. Combined, the Form 2 provides prints suitable for dental applications and is among the industry’s most accurate. Printing a single mandibular arch model at the highest resolution requires about five hours, an average time in comparison to other available desktop 3D printers. The most impressive aspect of the Form 2 is its proprietary biocompatible resins optimized for dentistry. Its resin is both USP Class VI and ISO 10998 certified, meaning it has been certified twice over as biologically safe for use in humans. While other printers can certainly use this resin, the Form 2 works most predictably and capably with this material. The Form 2’s biocompatible resin, excellent part quality and average print speed make it an enticing candidate for use in a dental practice. Along with its large resin tank, impeccable customer support and versatile printing ability, it is no wonder why it is a popular SLA 3D printer.

— Alexander Lee, DMD

**PLNAR** (Free, Smart Picture Tech)

Designing new or updating current offices usually starts with detailed plans of room layouts. Beginning this process would traditionally include hiring a designer or architect to take measurements on-site to create elevations and floor plans. Because mobile technology is evolving at a rapid pace, there are more virtual tools available today that replace the need for conventional methods to measure room layouts. PLNAR is an iOS app that utilizes the latest technology in augmented reality already included with the most current iOS devices to simplify this process.

PLNAR simply creates 2D and 3D models of rooms. The main screen is a live video camera feed where users point their iOS device at the floor and move around until a target overlay appears on the center of the screen, which indicates the app has detected the floor and surroundings. Users position the device to align the target over a corner perimeter of the room and tap the center white button, marking its position. From there, users move on to the next perimeter corner of the room and mark its position and eventually complete the layout upon returning to the original perimeter corner. The complete perimeter of the room then appears in an augmented reality space where users can mark doors, openings or walls whenever a selected perimeter space is centered on the target overlay. When a wall is marked, users can measure from the floor to the ceiling of a room by using the “Lift” button. Pictures of a room can be captured with the “Camera” button and annotations of room segments can be recorded with the “Edit” and “Annotate” buttons. The end result of the capturing process is a 2D or 3D model layout of the room that includes area, perimeter and wall surface area measurements. Projects can be exported to PDF or CAD files that can be shared with contractors or designers with a Pro Report in-app subscription purchase. The capturing process is extremely forgiving of obstructions due to furniture or objects, but exact measurements are difficult because perimeter corners are marked manually rather than being detected automatically.

PLNAR offers practice owners, DIYers and remodelers a quick and refreshing way to begin new ideas. Although its use may be limited to rough estimates, the app does provide a fast and simple alternative to conventional methods.

— Hubert Chan, DDS
EXPAND YOUR EDUCATION.
EARN C.E. WITH 150+ COURSES, INCLUDING HANDS-ON WORKSHOPS FOR YOUR ENTIRE DENTAL TEAM.
April, from the United States—a stay-at-home mom who loves camping, baking, and teaching—smiles most when she is with her family. Opalescence Go® whitening trays are an easy way for her to whiten and juggle four kids at the same time. A brighter, whiter smile is sure to bring out your patient’s personality. That’s the power of a smile. Find out more at ultradent.com/mysmileispowerful.