

Bridging Futures EXPLORATIONS in Dental Research

A QUARTERLY JOHN C GREENE SOCIETY NEWSLETTER

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Developmental Disabilities Patients

Expanding Dental Care

Written by Brianna Devito '18

One in six children in the United States is affected daily by developmental disabilities (DD), reflecting approximately 15% of the population and growing. When compared to non-disabled adults, DD individuals are significantly more likely to have fair or poor general health. Our current healthcare delivery for the DD population is narrow-reaching and deficient.

Caretakers of DD people face tremendous adversity accessing general and dental healthcare. The difficulty arises in finding a provider who is both comfortable treating the DD population and accepts state-funded health insurance, which is nearly impossible.

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Our Future with Evidence-Based Dentistry

Written by Morgan Nelson '19 from an Interview with Dr. Sophia Saeed

In the last few months, our D1 simlab schedule was altered to make room for the EBD lecture, to which many of our professors were required to attend. In order to make this event happen, 1-2 rows of clinic had to be closed every day that week in order to allow part-time faculty to attend. This 8 hour lecture series was offered Monday-Friday and was taught by two of the most preeminent speakers from the ADA. Faculty were officially presented with the concept of EBD, which is at its heart a philosophy of thinking critically about oral health care.

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LETTER FROM THE Editor



Dear Readers,

Welcome to the new look of the JGS quarterly newsletter, Explorations!

We have big shoes to fill from our predecessors and are looking forward to another great year being involved in research, supporting each other and getting the word out about all of the exciting activities and accomplishments here at UCSF.

The theme will likely be the same every quarter that I have the honor to be at the helm of this newsletter: [research through the storytelling format](#). Together we can accomplish great achievements, but there are so many individual, personal stories of failures and successes along the way- these are the articles I love.

Turning 30 recently helped me see how quickly time passes and how living a meaningful life involves looking outside of myself to embrace our shared experiences. The first year of dental school is an endeavor you do not understand unless you have lived it. Let's celebrate our successes and embrace our failures! Let's go explore new ideas and take responsibility for our education and futures!

Warmly,

[Morgan Nelson](#) | [John Greene Society](#) | [Editor-in-Chief](#)

PRESIDENT'S Message



Fellow John Greene Society members,

I would like to thank all members of JGS who made this past year a success. We proposed and successfully executed new initiatives, ranging from weekly journal club meetings to case study workshops where we featured cases from different specialties. These achievements were only possible thanks to your contributions and active participation.

In addition to these new initiatives, a record number of 23 pre-doctoral students were selected for the UCSF Summer Dental Student Research Fellowship Program. This program would not have been possible without generous support from its sponsors, including the UCSF School of Dentistry, our Dean of Research, Dr. Thomas Lang, Dean Perry, and many more whom we would like to extend our gratitude to.

As chapter president, my primary goal is for JGS to be the best resource for dental student research. We will continue to provide opportunities for student engagement in research through workshops and seminars to enrich your dental education. Also, we will build a website to help students find research mentors, events, and our quarterly newsletters.

Lastly, next year's AADR conference will be in San Francisco. JGS is thrilled to warmly welcome fellow researchers from across the nation to our great city. We strongly encourage everyone to participate and volunteer at this event as it will be a great opportunity to network and share ideas with similarly motivated students.

Please contact me at any time with feedback or ideas for how we can take JGS to a new level of excellence. I am excited to work with everyone this year!

[Linda Kim](#) | [John Greene Society](#) | [UCSF NSRG Chapter President](#)



Expanding DENTAL CARE

CONTINUED FROM COVER

BRIANNA DEVITO '18

Ultimately, healthcare providers struggle to provide services for DD patients due to limited research addressing policy as well as resources for healthcare professionals. These shortcomings coupled with a lack of necessary armamentarium to care for DD patients contribute to the unfortunate reality that most DD adults over 21 lack access to routine dental care.

Studies have found that most general dentists do not feel adequately prepared by their pre-doctoral training. However, those who feel their training was more sufficient reported they were more likely to treat special needs patients. The study concluded that because access to care is a huge problem for special needs patients, *revising dental curricula* could potentially reduce this burden.

Currently, pediatric dentists possess the expertise most compatible for treating DD patients. Ideally, a pediatric dentist could provide lifelong care to their established DD patients. This, however, is unrealistic, as the American Academy of Pediatric Dentistry (AAPD) discusses in its Guidelines on Management of Patients with Special Health Care Needs (SHCN). The AAPD recognizes that SHCN patients have difficulty transitioning from pediatric to adult primary care since few providers are willing and able to appropriately manage these patients. So what happens to DD adults who age out of their pediatric dentist's scope of practice?

Dentistry has finally achieved recognition as a public health measure in the Healthy People 2020 goals. Although this was a huge feat for the profession, the Healthy People dental goals still do not address oral health of DD people.

This is surprising given the evidence showing DD people have significantly higher incidences of untreated dental caries and periodontal disease when compared to non-disabled and physically disabled individuals.

This conundrum begs the question – is the treatment of developmentally disabled adults who can no longer see the pediatric dentist a problem for public policy reform or for dentists?

Is the advent of a sub-specialist to cater to the recondite needs of DD patients necessary, or must we reform our policies to allow pediatric dentists to continue to provide DD patients for their lifetime? The ADA does not recognize a niche in dentistry for DD patients, although evidence supports that DD patients require a unique approach to successfully receive care. Sub-specialty training focused on DD patients would encompass language and communication needs, treatment planning, and the provision for adequate home care.

Perhaps it would be wise to consider such a specialty or sub-specialty to allow more dental professionals to join the community of healthcare providers and policy-makers involved in changing the lives of DD patients.

Evidence-Based

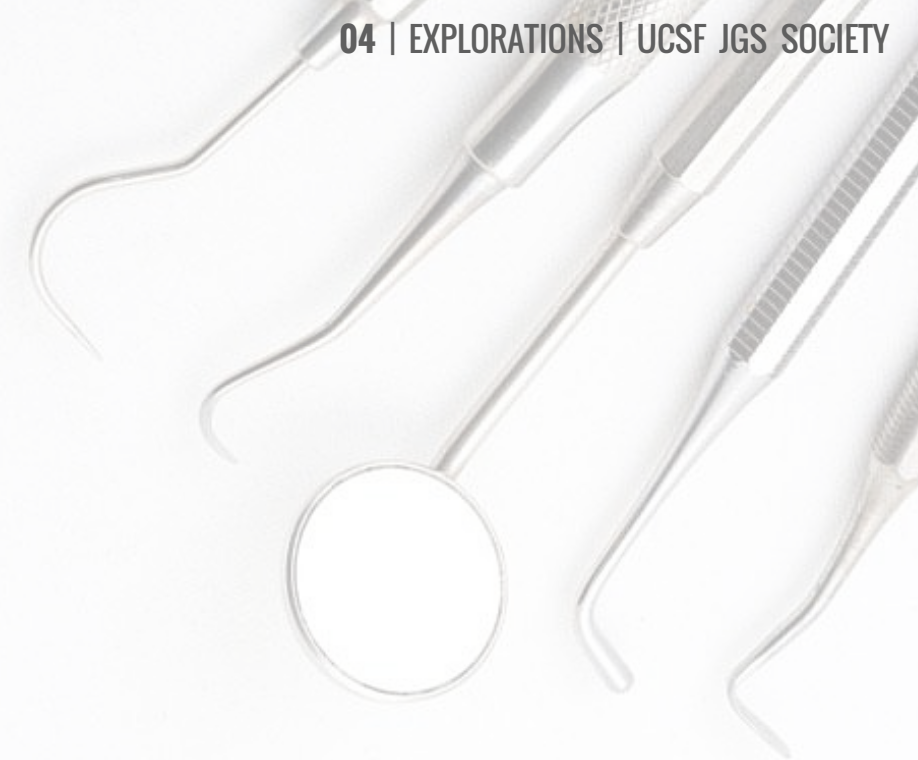
DENTISTRY

MORGAN NELSON '19

This lecture also included hands-on computer training to teach faculty how to use sites such as PubMed and CASP. Furthermore, faculty members were taught on how to do literature search, levels of evidence and appraise a paper that best caters to a patient's needs.

In the last two years, there has been an extensive push to update the dental school curriculum to reflect newer standards of critical thinking and EBD. Examples of this implementation can be seen in the pilot OSCE (objective structured clinical exams) taken by the D2s before entering clinic. The objective of these assessments is to determine that all D2s have the required skills to enter clinic, as well as to gauge what curriculum changes need to be made for the D1 & D2s.

What I as a student had never thought about is that when you create a curriculum for students, you also have to create a parallel training curriculum for faculty. If we are to uphold the high standards of our field, we must train to become lifelong learners, and not just regurgitators of facts. We, regardless of age, need to have the skills, such as computer skills and familiarity with available resources, to be able to be lifelong learners. This is why programs like the faculty training are occurring, and why our professors have been mentioning that changes are ahead for us. Examples of how strong research finding has affected our curriculum has been to not use an explorer to probe a potential carious lesion. As some faculty have been practicing dentistry for close to half a century, it is understandable why it would be difficult to enact school-wide policy change at this point in their career. Thankfully, we have faculty like Dr. Graham who are excited about these changes and are preparing us, the D1s, so that we will be willing to change in the future.



On your way to simlab, right before turning left to go past Rich's office, take a look at the bulletin. There you will find the 12 new competency statements for our school (it used to be 17!) This bulletin represents countless hours of faculty time, especially the work of Dr. Sophia Saeed, to perform background literatures searches, needs assessments, curriculum committee formation, town hall meetings, faculty retreats and eventual new methodology and point of view to carry our school into the current age of the critically-thinking dentist.

Incorporating the Evidenced-Based Dentistry philosophy into our curriculum is the missing link between the research being done and the patients being treated here.

If we want to continue to enjoy our reputation as one of the premier educational sites in the country, the burden lies partially with us students, especially those involved in research, to stay informed on the curriculum changes occurring, to develop a strong voice and communicate with faculty and administrators, and to set the standard for classes of dental students to follow us about what kind of dentists and healthcare practitioners we want to be.

Hopefully, we students can see our time here at UCSF not just as a resource to use to better our own lives, but as an opportunity to contribute to a legacy that will continue long after we have laid down our handpieces.... or explorers. :)

NIH!

National Institute of Health

Interview with Molly Hague '16,

I am ecstatic to share my research experiences and lessons with you! To start, I am corn-fed Midwestern, born and raised in Kansas, moved to Missouri for my undergraduate degree, and headed west for a goldmine of knowledge in San Francisco at UCSF to pursue my DDS. Today, I am back at UCSF finishing my fourth year. Last year I lived in Bethesda, Maryland. "Why?" I spent a year away between my clinical training years at UCSF to do research at the National Institutes of Health (NIH). Specifically, I was apart of the NIH Medical Research Scholars Program (MRSP) and did research at the National Institute of Dental and Craniofacial Research.

Why did you decide to do this program?

I became interested in research during undergrad, spending two summers in a basic science research lab in Kansas City. In dental school I completed a summer of research and afterward found it hard to balance a basic science research project and dental school training. However, I wasn't ready to leave the vibrant learning environment in the laboratory. I learned about the *NIH MRSP at the American Association for Dental Research (AADR) conference*, and realized it would give me the opportunity to dig deep into a research project and learn how to scientifically evaluate past, present, and future oral healthcare practices to improve patient care.

What is your research about?

In the past my research projects have focused on craniofacial development on mouse and duck models. At the NIDCR, I worked in laboratory of cell and developmental biology working with cell cultures. I researched the invasion and metastasis of oral cancer cells. The lab I joined, Dr. Ken Yamada's lab, focuses on extracellular matrix and cell development. Upon entering, the lab had a few ideas to help me get started with the oral cancer cell lines, including evaluating their invasive capabilities and mechanisms responsible for their behavior. Working with cell culture helped me better understand the mechanistic principles of development.

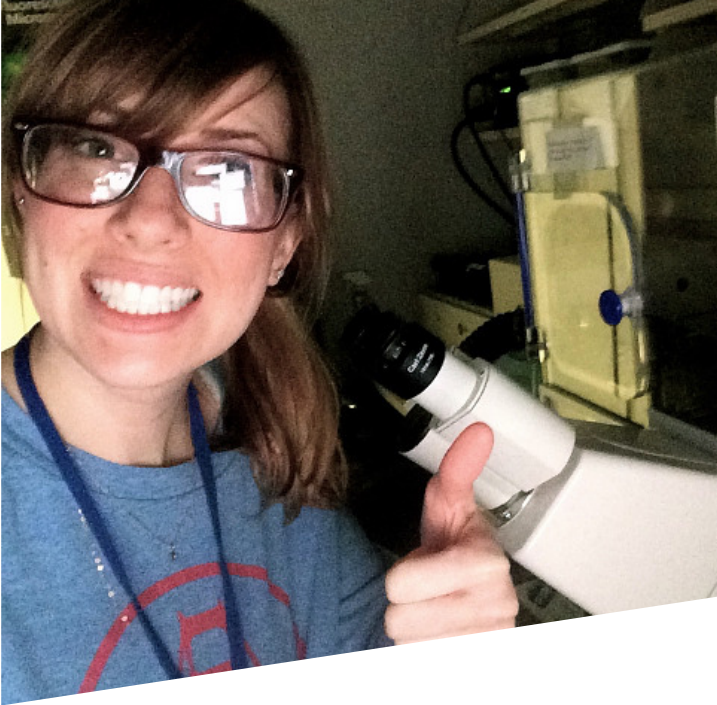


What would you recommend for someone who is interested in going down your same path?

If you are interested the slightest bit in research, learning how to ask good questions, or pursuing a career in academia, apply for the NIH MRSP! It may seem daunting to take a year away from dental school, but any challenges you face and overcome will only make you a better leader and dental professional, regardless the path you choose. Ralph Waldo Emerson once said, “Do not go where the path may lead, go instead where there is no path and leave a trail.” Take advantage in exploring various career paths while you are in school, you have absolutely nothing to lose. I know it is hard to leave all of the friends you have made in your class, but you will continue to be close to your classmates, will make lasting friends during your year away, and also return to make more friends in your new class. You will definitely not have a shortage of interesting, loyal, caring, lifelong friends!

What's next?

On June 9th you can find me walking across the stage at the San Francisco Davies Symphony Hall. June 12th I will be moving back across country. June 13th I start my residency training at Washington Hospital Center (WHC) in Washington, D.C. as a PGY1 Orthodontic resident. In addition to my training, I get to spend one day a week at Children’s National Medical Center participating in weekly craniofacial team evaluations and providing treatment to patient’s needing craniofacial grown modifications and early interceptive treatment. I am excited to begin the next chapter of my life and plan to continue to explore the mechanisms of craniofacial development throughout my residency and future career as an orthodontist. As always, do not hesitate to contact me if you have any questions at molly.hague@ucsf.edu. Note: Article modified from ASDA Mouthing Off blog posted Feb. 25th, 2015



COMING ATTRACTIONS IN EBD

SUMMER RESEARCH FELLOWS JOURNAL CLUB

Grace Zhu and Taran Cheema will be leading the summer research fellows of 2016 in a weekly journal club

FACULTY JOURNAL CLUB

As of May, 2016, a monthly faculty-led journal club is in effect

QUARTER BREAKS

4 hour sessions will be held for faculty to analyze current research findings & consider implications to curriculum

EBD TRAINING

2-3 Faculty leaders will be invited every year to participate in the 40-hour EBD training thru the ADA

PILOT OSCE

Curriculum changes for D1 and D2 students assessed after results from OSCE study are completed

NEW COMPUTERS

8 new computers in clinic will be placed with PubMed and CASP links to allow for research to be applied in real-time to patients



This year at 2016 American Association for Dental Research in Los Angeles, UCSF School of Dentistry had the great honor of having two students win top awards in prestigious research competitions. Among a competitive pool of PhDs and other driven student researchers, MyChi Nguyen '17 won first place in the Junior Category for the Hatton Award and Wendy Fu '18 won third place in the 2016 DENTSPLY/Caulk Student Research Group competition. Please join JGS in congratulating them with their accomplishments!

Interviews by Linda Kim '19

Interview with MyChi Nguyen

Tell us about your research

I work with an enamel protein called amelogenin. It's the most abundant protein in the developing enamel matrix and is recognized to play an important role in directing the mineralization of enamel into highly organized apatite crystals. Our lab has found that amelogenin can self-assemble in vitro into nanoribbons, resembling the early apatite ribbons found in enamel. My particular project involves studying the effects that various divalent cations have on this self-assembly process. Elucidating this aspect of self-assembly may give us a better overall understanding of how amelogenin interacts with the inorganic matrix to form the highly organized architecture of enamel rods.

How did you find your research mentor and project? How long have you been working on it?

Roger was really helpful in getting me started on finding a mentor. He gave me a list of potential mentors along with a synopsis of their projects. Dr. Habelitz's research stood out to me since it involved enamel regeneration, an area I was particularly interested in. How great would it be to be able to replicate the hardest tissue in the human body? That could really revolutionize dentistry! After establishing that we would work together, I met with Dr. Habelitz and my

postdoc mentor, Dr. Carneiro, to come up with a project. I worked on the project full-time over the three-month summer break after D1 year and have continued to be involved with it intermittently over the past two years.

How did you learn about the research competition? How did you prepare?

I first learned about the competition from several other UCSF researchers who were finalists previously. After submitting an abstract and discovering that I was selected as a finalist myself, I prepared for the competition by rehearsing my presentation with my research mentors. I received numerous constructive feedbacks from them and felt thoroughly prepared when the time came for me to compete.

What was the competition like and what was your overall experience at 2016 AADR?

The Hatton competition is judged based on three components: a detailed, six-page abstract, an oral presentation, and a questions/answers period. I submitted my extended abstract for grading a few weeks before the actual competition. During the 2016 AADR meeting, I gave a ten-minute oral presentation of my project

to a panel of three judges. The judges then had five minutes to ask me questions. Overall, the competition wasn't too stressful, and I'm glad to have had the experience. The competition was earlier on in the week, so I had the remainder of the time to take part in the activities and events at the AADR meeting. I had a great time there, was inspired by many interesting research talks, and would wholeheartedly recommend the meeting to anyone interested in dental research.

What advice would you give to future candidates who would like to participate in these competitions?

I think the key to going into any competition with confidence is to understand the material that you will be presenting on inside and out. Remember that no one else knows your project as well as you do. You're the expert. What helps me personally is thinking of the competition not as a competition, but as a means for me to get others interested in what I'm passionate about. You've worked hard on your project; go showcase your results!

Interview with Wendy Fu

Interview by Linda Kim '19

Tell us about your research

I worked with Dr. Sarah Knox to study the autonomic nervous system in human and mouse embryonic salivary gland. My final project focused on the timing of sympathetic innervation during salivary gland development, and the neuronal influences driving progenitor cell proliferation.

How did you find your research mentor and project? How long have you been working on it?

I first learned about Dr. Knox's research from Minerva Loi's (D3) presentation at the 2014 Research Day. I remember thinking to myself, Wow, how cool would it be if I can do something like this?! So when I met Dr. Knox at the JGS Fall elective and saw how captivating her presentation was, I knew she was the mentor. Dr. Knox is amazing. She helped me brainstorm research ideas and guided me throughout the entire 3-month period I was in lab. And I am really happy with how my project turned out. Our study focuses were very novel, since the research on the role of sympathetic nerves is very scant. Also, I was very fortunate to have tissue sample of embryonic human and mice salivary glands, which are incredibly beautiful to look under the microscope!

How did you learn about the research competition?

How did you prepare?

There was an option to participate in either the DENTSPLY/Caulk or the AADR Hatton Awards Competition, when we submitted our abstract for AADR/CADR Annual Meeting. I was



selected for the DENTSPLY/Caulk competition, where I presented my research poster to a judging committee. To prepare, I first wrote out a script and tried to memorize it. This way, during my presentation I could concentrate on what I was saying, rather than remembering what to say next, and also make eye contact. I learned this from watching TED Talks. I also made sure that I completely understood my project and was able to explain each step behind it. Finally, a good night rest and a healthy breakfast helped me to stay clear-headed and confident during the competition!

What was the competition like and what was your overall experience at 2016 AADR?

14 finalists were selected for the competition, with 7 for basic science and 7 for clinical science. We each had 15 minutes (10 for presentation, 5 for Q&A) to present our research poster to a judging committee,

which consisted of NRSB board members, in a closed room. I had a fantastic time at AADR! I felt especially proud to represent UCSF and also of the great accomplishments by my classmates and colleagues. The conference brought my classmates and me closer than we already were. Everyone was so supportive of each other and I was grateful that I could share this special memory with them.

What advice would you give to future candidates who would like to participate in these competitions?

Be confident! You are an expert on your field of research and just remember that! Your passion and personality will then come naturally through your presentation. And also enjoy your time at the conference – it's really an once-in-a-lifetime experience!



ROGER MRAZ

*So much more than just sweet
kicks*



This May, our own Roger Mraz received the **Chancellor's Award for Exceptional University Service**. Some may know him as the program administrator for the Office of Graduate and Research Affairs and the Oral and Craniofacial Sciences Graduate Program,

but dental students know him as so much more- baker of creative birthday cookies with associated shameful Facebook pics, wearer of exceptional footwear or as someone who is always there for you. This award is given to someone who goes above and beyond in their job. He supported the current dental students and reaches out to prospective students. He runs Research & Clinical Excellence Day, not a small task!

Dr. Chaffee's words about Roger perfectly encapsulate how we feel about him and how grateful we are for everything he does:

“What’s extraordinary about Roger is how clearly he cares not only about the quality of his work but also about the people whom he supports with his work: faculty, administrators and, especially, the students.”



Student Summer Journal Club

This summer the 23 2016 Summer Research Fellows will be coming together for a weekly student-run Summer Research Fellowship Journal Club. Each week two fellows will be presenting a research paper related to their field of study. This is an opportunity for their peers, mentors, and many others to be exposed to their research and it's progress. Also, it will be a great opportunity for each fellow to practice presenting their literature and receive feedback from their peers. This year's Summer Research Fellowship Journal Club coordinators are Grace Zhu and Taran Cheema.





INTERVIEW WITH JESSICA ST. MARTIN '18

I discovered my love for research during the two years I spent studying brain plasticity in the hippocampus at my undergraduate. My team's project found that brain plasticity (learning) was substantially lower in a stressed mouse than in a control. We also found that the negative effects of stress were countered by exercise, and that stressed mice that had access to a rodent wheel had plasticity that was similar to the mice that were not stressed. This project helped me get my feet wet in the research world and when I was researching dental schools, my professor and mentor encouraged me to find a program that would allow me to continue doing research.

Coming to UCSF, the JGS summer fellowship program was something I knew I wanted to be a part of and I was mentored by Dr. Chaffee, Dr. Aamodt, and Dr. Orellana. In my summer project, I expanded my horizons to work in epidemiology and clinical research. I worked with a data set of almost 2,300 participants who had been examined and surveyed over the past two years from multiple trips to Mexico and Peru by UCSF researchers. There have been many studies that compare self-perception to doctor-perception of malocclusion but there are very few that look at Latino populations.

See more about my project here

The summer research program has opened many doors for me, and I am even traveling abroad to present at an international conference over summer break with Dr. Orellana. They say it takes an army to raise a child, and I am happy to have the support of so many mentors at home and here at school that continue to guide me and help me take advantage of the opportunities life has to offer. Through research I have been able to harness my passion for learning why we do the things we do and how we can modify our practice in the future to better serve ourselves and more importantly those around us.

AIMS & FINDINGS

TWO MAIN AIMS:

1. to assess the relationship between self-perceived and normatively-determined malocclusion
2. to compare quality of life according to self-perceived and normatively-determined malocclusion.

Basically, I compared what people think of themselves to what doctors think of them, and both of those measures to oral health related quality of life.

RESULTS

It may or may not be a surprise, that I found that self-perception is a better indicator of quality of life than clinician-perception of malocclusion. If the participants believed their teeth were very straight and they did not have malocclusion, then they perceived a higher quality of life, even if they did in fact have crooked teeth that the examiner determined warranted orthodontic treatment. Likewise, the participants that had self-perceived malocclusion and crooked teeth reported lower quality of life, regardless of how the examiner scored them on the Index of Orthodontic Treatment Need.

RESULTS

The participants that believed they had crooked teeth even when they didn't, had statistically the same quality of life as those that believed and actually did have crooked teeth. My study suggests that what we think about ourselves is perhaps more important than what others think and that the patient's perspective should be considered when treatment planning. To improve treatment outcomes, the patient and the doctor should be on the same page, but my research revealed that the participants and the clinicians rarely agree on the severity of the malocclusion.

OF INTEREST

I am most interested in the group of people that falsely perceived malocclusion that warranted orthodontic treatment when the clinicians determined they did not need it.

The participants tended to underestimate the severity of their malocclusion. This is important to recognize, because it could potentially lead to unrealistic expectations about treatment time, outcomes, or patient compliance.

BETWEEN 2 WORLDS

Written by Sean Full

If you live in the United States for so long it's difficult to imagine a world where we are not the center. Staying in Chengdu, China challenged this notion and presented me with a very different reality. Stroll down any given street and you can witness an age-old culture that still looms in the hearts of all the locals. Take a turn around a different block, and witness the youth paving the way into a generation of technology and modernism. This is exactly what inspired me to waste no time and soak in everything I could possibly

Initially, I really did not know what to expect, other than the fact that I would be in Chengdu experiencing the life of dental student at WCCS (West China College of Stomatology). However, I was excited to go to a different country and see how a different political and economic landscape can shape the dynamic between dentistry and research.

In many ways, I expected a stark contrasts between UCSF's program and WCCS's dentistry program. But this was not the case, and I saw many similarities between the two schools. Attending courses with local students and conversing with them in both Mandarin and English, I learned that China's younger generation were the driving force of China's scientific growth. Students both in the USA and China were driven by the ambition to be scholars.

In regards to curriculum and academic structure, I realized that dental schools in the United States promote students to self-learn through problem-based learning or online literatures, modules, and podcasts. In China, lecture-based learning is more prevalent. Furthermore, dental education in China is more of a sub-specialty of medicine, or "stomatology". This explains the inherent differences and higher presence of oral maxillofacial surgery and craniofacial surgeries performed in China than in America.

Interestingly, American dentistry features more structured career pathways. Here, dentists engage in a full-time work, attend continuing training/education programs, belong to an association, gain legal status, and construct a code of ethics emphasizing quality of care. On the other hand, in China professional development is still considered primarily in the context of promotion or achieving a higher professional title.

In conclusion, Chengdu is an urban center and transportation hub for the entire Sichuan region of China. Furthermore, ambitious youth are driving forward scholarly discovery in many areas – just like at UCSF. It is therefore no surprise this city is at the forefront of Stomatology and dental education. I learned from this culturally rich but brief adventure that I will never truly understand all the idiosyncrasies that make China so unique. China is just too vast, too diverse and too old.



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