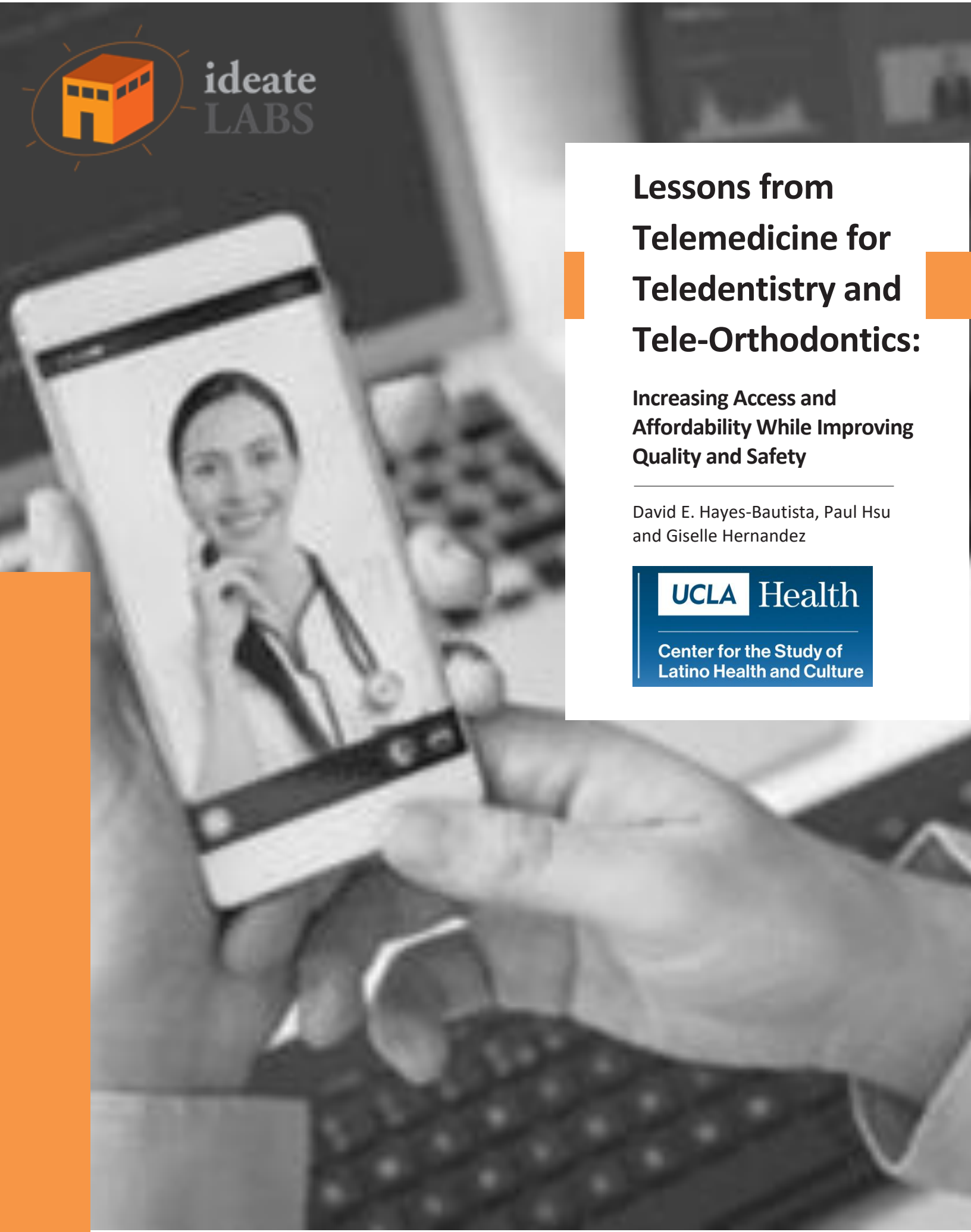

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Lessons from Telemedicine for Teledentistry and Tele-Orthodontics:

Increasing Access and Affordability While Improving Quality and Safety

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Background

In 2007, the Center for the Study of Latino Health and Culture (CESLAC) published a peer-reviewed paper, "The rise and fall of the Latino dentist supply: Implications for dental education." This paper concluded that "the Latino dentist shortage is critical and getting worse, affecting the Latino population's ability to find linguistically and geographically accessible dentists." The paper closed with a prescient admonition: "If dental education does not step forward to offer a solution, it is probable that lawmakers will provide one of their own." (1). Nearly 15 years later, CESLAC's prediction of California's growing Latino dentist shortage is no longer an early warning but a nearly tragic reality.

The COVID-19 pandemic has already greatly impacted the healthcare world, prompting providers to turn to new health care delivery methods, such as telehealth, in order to provide patient care while ensuring patient and provider safety (2). This white paper presents lessons learned from a recent CESLAC report on telemedicine, and suggests that teledentistry and tele-orthodontics may provide one way of increasing access and affordability for Latino patients seeking care, in spite of the growing Latino dentist shortage.

This paper conceptualizes the burden that the Latino dentist shortage imposes on Latino populations seeking dental care as the "Latino Dental Dilemma" for general dental services, and as the "Latino-Ortho Dilemma" for Latinos seeking orthodontic care in particular. This paper concludes by proposing recommendations for further research and usage of teledentistry and tele-orthodontics in order to better serve vulnerable communities and improve access to quality oral health care.

Introduction

> *My mom told me that my teeth aren't that crooked, at least not bad enough to spend thousands on braces, I didn't need them, at least not the top ones, and no one was going to be looking at my bottom teeth. The same thing happened to my partner, he wanted braces but he had basic, I think Medi-Cal that did not cover braces. He said his parents said braces were out of the question, too expensive."*
>
> --Marisela, 30-year-old Latinx recalling her experience

Demographic Dynamics of Latino Young Adults

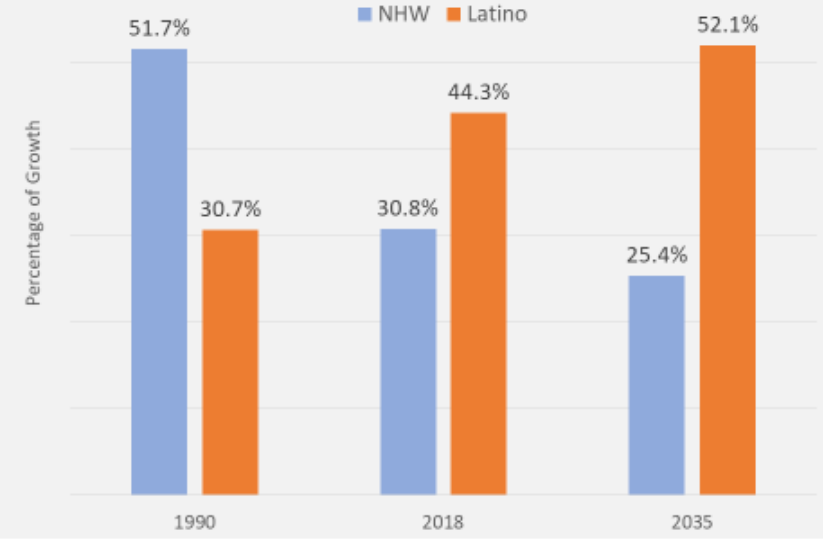
While the Latino population in California has been growing steadily since the California Gold Rush, only recently has that growth been noticed by the state's public and private institutions, particularly those that interface with the young adult-age population, age 18-34 years. For example, the Latino enrollment in the University of California system was less than 1% in the 1960s, and the intellectual development of Latino students was not a priority. In 2020, the University of California system has evolved into a Hispanic Serving Institution with an overall Latino enrollment of 25%: Indeed, the single campus of UC Merced has a 56% Latino enrollment. The issue of Latino intellectual development is now a priority for the university system.

While the growth in Latino enrollment has taken the UC system by surprise, the demographic dynamics spurring this change has been at work for over 160 years. This is depicted in the Figure 1 below which describes the growth of the young adult (18-34) population over the last 45 years.

In 1990, the majority (51.7%) of young adults in California were Non-Hispanic White (NHW,) and Latinos were less than one-third (30.7%.) By 2020, Latinos now form a plurality (44.3%) of the young adult age group. And, by the time the young adults born in 2000 reach adulthood in 2035, Latinos will be the majority (52.1%) and NHW will be about one-fourth of the population (25.4%.)

Like the University of California system, many of the state's public and private institutions are trying to learn how to better engage this new majority population. It is in the interest of the dental profession to be among those institutions.

Figure 1.
Demographic Dynamics of the Young Adult Population (18-34), California 1990-2035



Sources: 1990: California Department of Finance, 2018 CESLAC Tabulations, ACS 2018

Latino Populations and Oral Health

The Centers for Disease Control reported that overall, Non-Hispanic Blacks, Hispanics, and American Indians and Alaska Natives generally have the poorest oral health of any other racial and ethnic groups in the United States. The greatest racial and ethnic disparity is seen in children aged 3–5 years and aged 6–9 Mexican American and non-Hispanic Black children (3). Among 5-17 year-olds, the most prevalent condition is dental caries, occurring more than 5 times more frequently than asthma, the second most common condition (4). Dental caries is a preventable and treatable condition (5) but negative outcomes have been seen, such as pain in the oral cavity that can affect speaking ability, eating, sleeping, and swallowing. The pain can also alter appearance, undermining self-esteem (6).

Young Adult Latinos and the Labor Force

In the United States, every year about 500,000 non-Hispanic white "baby-boomers" leave the labor force, and every year 1 million US-born Latinos replenish what would otherwise be a shrinking workforce (7). The Latino post-millennials entering this labor force are highly educated, 90% graduate from high school, and 70% enter college (7). They are entering a professional workforce where their personal and non-verbal communication skills are important, and the ability to communicate non-verbally via a smile is considered a valuable professional asset. However, for many Latino millennials and post-millennials, having braces as a child was a luxury that their parents could not afford. This is the "Latino-Ortho Dilemma."

The Latino Dental Dilemma and the Latino-Ortho Dilemma

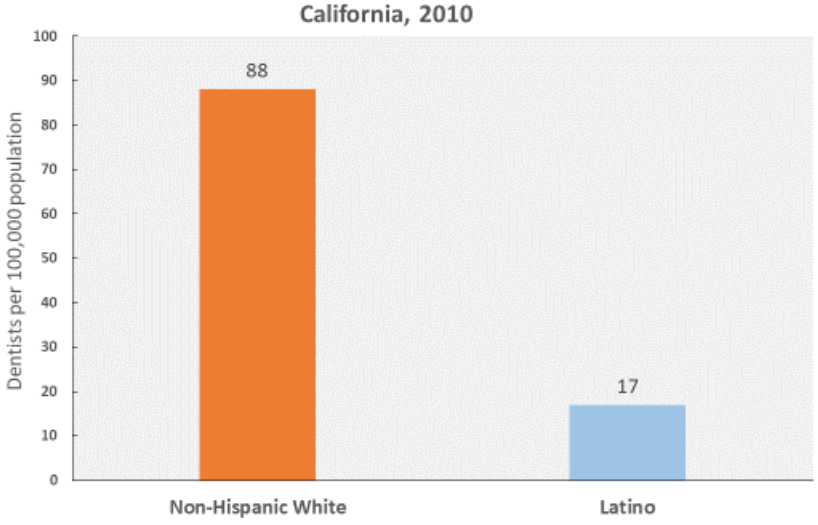
The aforementioned quote from Marisela, illustrates how the Latino dentist shortage combines with the lack of dental insurance and the low income of Latino households to create the "Latino Dental Dilemma" for those seeking dental services in general, and more acutely, the Latino Ortho Dilemma for those seeking orthodontic services in particular.

LATINO DENTIST SHORTAGE

One component of the Latino Dental and the Latino Ortho Dilemma is the Latino dentist shortage. While a dentist does not have to be Latino to treat Latino patients, there is a huge correlation between the race/ethnicity of a dentist, the choice of practice location and the language ability of the dentist. Latino dentists are far more likely to practice in largely Latino zip codes than non-Latino dentists. And, not surprisingly, Latino dentists are far more likely to speak Spanish than non-Latino dentists.

Unfortunately, the state's schools of dentistry have done a remarkably poor job of graduating Latino dentists, thereby creating dental shortage areas in largely Latino zip codes. In California, there are 88 Non-Hispanic white dentists for every 100,000 non-Hispanic whites, but only 17 Hispanic dentists for every 100,000 Latinos. On a standardized basis, there are 80% fewer Latino dentists than there are NHW (7) as seen in Figure 2, at right.

Figure 2.
Dentists per 100,000 Non-Hispanic White and Latino, California, 2010



Source: Hsu, Schink, and Hayes-Bautista. In submission, 2020.

Overall, the Latino dentist shortage means that there are fewer dentists who are likely to locate their practice in largely Latino areas, and fewer dentists who can communicate with a Spanish-speaking patient population thereby further impacting Latinos access to high quality, culturally competent, safe dental care.

Lack of Adequate, Affordable Dental /Orthodontics Insurance

Another barrier Latinos face in accessing health care is that, even after the Affordable Care Act, Latinos are still 2 times more likely to not have health insurance compared to non-Hispanic whites (8). Latinos are even less likely to have access to dental insurance. A recent Centers for Disease Control and Prevention (CDC) report on Medicare patients with dental insurance showed that Latino elderly were 25% less likely to have dental insurance as part of their benefits package.

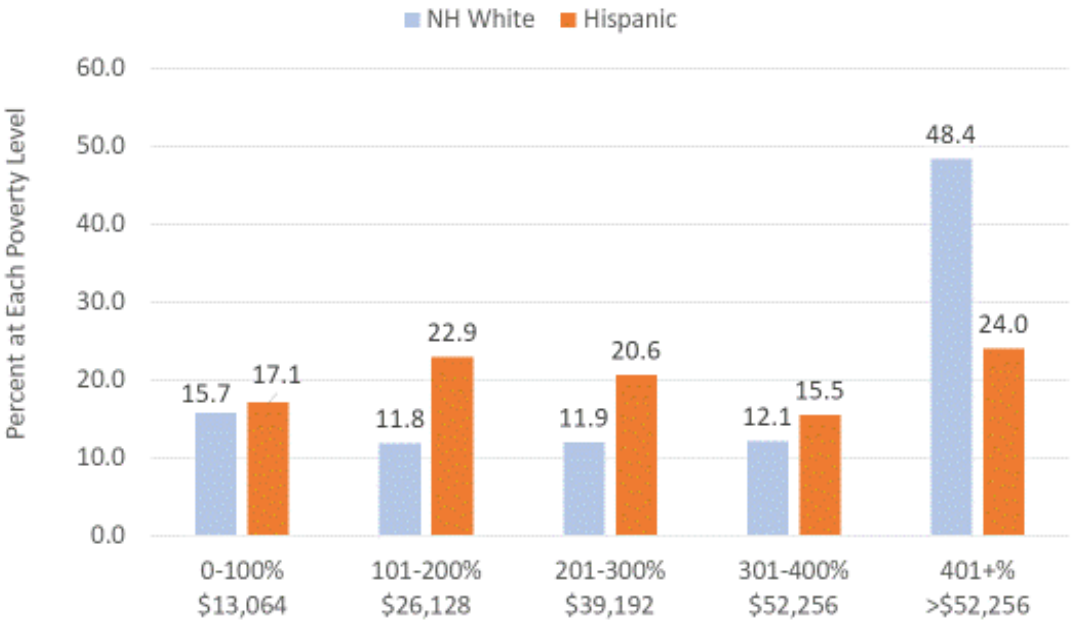
Private dental insurance is difficult to obtain, as few employers offer this as a benefit. And, once dental insurance is obtained from any of the four plans available in California (Anthem, Blue, Delta and United,) only one (Anthem) offers orthodontia as a primary benefit, with a $1,895 co-pay from the patient (9).

Public dental insurance (Denti-Cal) is available only to certain categories of beneficiaries, such as blind, disabled or under 21, with orthodontia available only for cases of labio-lingual deviation (10). The vast majority of the 18-34 age group is too old to even apply for this benefit.

Low Household Income and High Cost

Non-Hispanic White young adults tend to live in relatively high-income households: Nearly half live in households that earn over $52,256 per year (7). By contrast, Latino young adults are far less likely to live in high-income households: Less than a quarter live in households earning over $52,256 (7). See Figure 3 below.

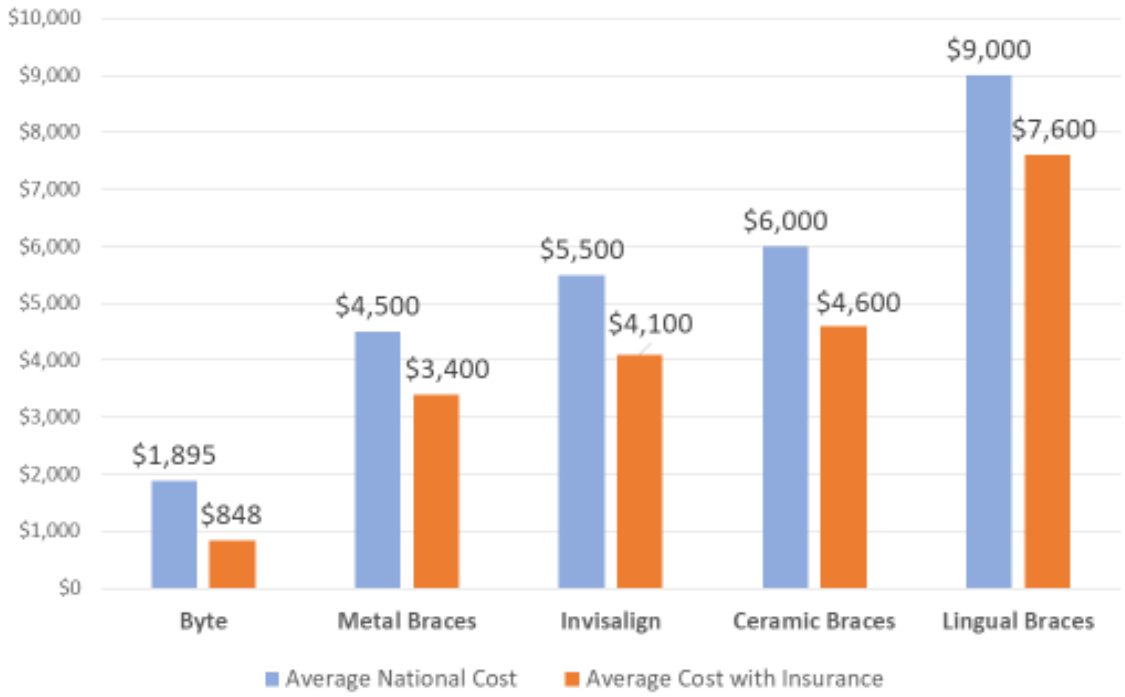
Figure 3.
Percent of White and Hispanic at Each Poverty Level,
for Ages 18-34, California 2018



Source: UCLA CESLAC Tabulations, ACS 2018

The out-of-pocket costs for orthodontic work in California can typically be as much as $12,000 (7), which can make the cost prohibitive for young adults in low-income households. And should that household afford dental insurance, they would still need to pay an out-of-pocket cost of around $10,000. A breakdown of orthodontics by type below reveals that while consumers have a variety of options to choose from, the vast majority of orthodontics can be quite costly even with insurance.

Figure 4.
Orthodontics Cost Analysis



Source: https://www.valuepenguin.com/average-cost-braces Updated May 13,2020

The Latino-Ortho Dilemma

This is the "Latino-Ortho Dilemma" many Latino young adults face when they think of accessing dental and/or orthodontic care.

- Latino dentist shortage means few Latino providers available to choose from
- Lack of dental insurance
- Low household income compounded by high costs of orthodontic care.

Marisela's experience mentioned earlier illustrates the Latino-Ortho Dilemma in one household. In many cases like hers, some Latino families must make the difficult decision of forgoing their child's braces in order to ensure that other household expenses are first addressed.

Telemedicine, Teledentistry and Tele-Orthodontics

California law defines telehealth as “a mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient’s health care while the patient is at the originating site and health care provider is at the distant site" (11). Telemedicine struggled for years to realize its full potential, hindered by a combination of unsupportive policies (limited insurance coverage, states’ restrictions on practicing across state lines), and patients’ attachment to the old-fashioned “laying on of hands’ kind of medicine” (12).

Although telemedicine has been developing for more than 50 years, with a recently strong integration of electronic media into health care (13), the COVID-19 pandemic, which is currently decimating communities throughout the state, has shifted part of the provision of care from traditional fixed office locations to telehealth services.

Many providers who were hesitant about the use of telemedicine now see its importance in light of the COVID-19 pandemic:

- Preserve the safety of both the patient and the provider
- Compensate for the relative shortage of providers caused by their re-assignment to handle COVID-19 surge care
- Temporary reimbursement for telehealth services by some insurers during the COVID-19 crisis.

It would not be an exaggeration to posit that the Latino dentist shortage, created by 50 years of dental school indifference to the racial/ethnic composition of their graduates, has been a major reason why Latino families lack regular access to a dental home (5). In view of the Latino Dental Dilemma and the Latino-Ortho Dilemma, the use of teledentistry and tele-orthodontics should be explored as potential means of increasing both the access to and affordability for underserved Latino communities. Further, given that Latinos form the labor force backbone of the state’s agricultural economy, teledentistry and tele-orthodontics are likely to be most beneficial in rural and underserved areas. In short, it is a method of delivery that has the ability to extend care to patient populations with limited access or no access to dental care (13).

Public Awareness of Teledentistry and Tele-orthodontics

In mid-April, as a result of provider adaptation to the structures of practice in the current COVID-19 environment, mainstream media has begun to report on the increasing use of teledentistry. A recent article, “Dentists Adjust to New Normal” informed the public that the dental industry is becoming accustomed to the idea of treating people virtually. One dentist’s experience was recounted: Jacob Berger, DMD, of Smiles at Lakewood Ranch in Lakewood Ranch, FL, states that patients want to be able to connect efficiently with their clinical provider. He found:

> *"Right now, patients are craving a personal touch . . . Adding teledentistry to my already varied offerings was just what my patients needed to feel reassured. That was especially important during this crisis. I was so pleased to see signs of relief on their faces by the time we completed our first virtual consultation. Patients need doctors who are forward thinking and willing to reach out in a new way as our situation evolves." (18)*

Telemedicine’s popularity has soared 525% from January, with stocks in telehealth climbing as well (15). Now there is also bi-partisan agreement and support for the removal of restrictions to telehealth (16). Moreover, in recent months, telemedicine has demonstrated its many opportunities and benefits as seen here in a recent article: "With my current concerns of keeping patients and their families safe during the COVID-19 pandemic, teledentistry enables me to provide safe consultations and dental care to those who otherwise might have to wait for treatment. Reassuring patients with live video allows me to evaluate emergencies and provide care instructions," Dr. Villarreal explains. "As I look to the future, I believe teledentistry will help dental professionals build healthier communities by expanding the reach and capabilities of traditional dental practices." (18) However, there are limitations such as a digital divide. In order to have a successful virtual meeting with medical or dental providers, patients will need to have access to technology and quality broadband. However, poorer communities lack quality broadband access (7), and navigating Zoom or other virtual meetings can be difficult for some non-English speaking communities (17).

Recommendations

The COVID-19 pandemic brought to the forefront the many benefits and uses of telemedicine. We suggest that teledentistry and tele-orthodontics learn from telemedicine with regards to opportunities for growth that will expand access to communities. We recommend:

- **Increase access to dental services.** While a long-term goal should be to have dental schools increase Latino enrollments to address the Latino dentist shortage, the multiplier effects of teledentistry and tele-orthodontics should be explored as one way of bringing services to underserved areas caused by the Latino dentist shortage.
- **Maintain affordability and promote innovation:** Cost-barriers continue to prevent underserved and low-income communities from having straight teeth.
- **Expand insurance coverage to include teledentistry.** One of the barriers to greater use of telemedicine was that many insurers, such as private insurers and public programs including Medi-Cal, did not adequately reimburse for telehealth services. The COVID-19 pandemic brought some temporary, emergency relief to this issue, however it is not clear whether this relief is temporary or permanent.
- **Remove internet platform barriers to access teledentistry**. The internet platform for teledentistry and tele-orthodontics needs to be strengthened for use in underserved Latino areas.
    - **Broadband connectivity**. The sudden closure of public schools, and subsequent reliance on on-line teaching, has highlighted the fact that heavily Latino areas do not have the same access to quality broad band service that allows multiple users in one household.

- **Language**. The internet platform needs to be able to provide support for under-served languages including: Spanish, Vietnamese, Filipino and South-East Asian.

- **Teledentistry patients should use platforms that have oversight by a licensed California dentist.** This cannot be overstated.

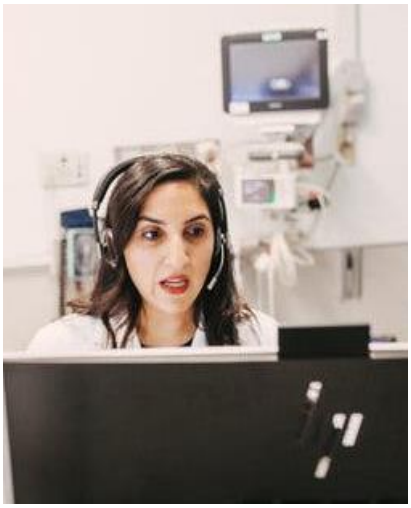
- **Ensure providers track data disaggregated by ethnicity and race.** While we have small data sets showing increased access in rural and underserved communities, more robust data sets are needed to meaningfully track utilization.

- **Adequately ensure consumer safety through research on the application of Quality Improvement Science to the unique issues of teledentistry, including issues of quality of care and safety**. Dental licensure boards should provide Quality and Safety best practices for teledental services. These best practices can best be developed by a consortium of academic researchers, professional societies and regulatory bodies.

- **Conduct population-based research on the Latino patient experience** with office-based and internet-based dental and orthodontic care.

Conclusion

The current COVID-19 pandemic opened the way to expand the use of telemedicine services to increase both access and safety simultaneously. It is appropriate and beneficial to apply the learnings from telemedicine to the field of teledentistry and teleorthodontics to increase access and affordability of such care, as well as increase safety, quality, and improve the patient experience.



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Since 1992, the Center for the Study of Latino Health and Culture (CESLAC) at UCLA has provided cutting-edge, fact-based research, education, and public information about Latinos, their health, their history, and their roles in California.

CESLAC provides data for policymakers, program planners, educators, and the general public, so they can make better informed decisions about how to address Latino health and education. Under the leadership of Dr. David E. Hayes-Bautista, and with support from generous sponsors, CESLAC is the leading research institution in:

- Pioneering medical education for Latino and other underrepresented minority students, including creating the first medical and public health courses at UCLA to focus on Latino health.
- Debunking myths and stereotypes about Latinos in California
- Emphasizing the positive contributions of Latinos to the history, economy, and society of California and the entire United States
- Educating the American public about the American Civil War origins of the Cinco de Mayo holiday via academic publications, public presentations, and school curriculum
- Reversing the underrepresentation of Latinos and other minorities in the health professions through MEDPEP, a medical preparation and education pipeline program.