



September 2024

# A Dental Revolution: Assessing the Impact of New Dental Technology on Dentists, Patients and the World

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### Recommended Citation

Graff, C. Robert (2024) "A Dental Revolution: Assessing the Impact of New Dental Technology on Dentists, Patients and the World," *Marriott Student Review*. Vol. 7: Iss. 2, Article 4.  
Available at: <https://scholarsarchive.byu.edu/marriottstudentreview/vol7/iss2/4>

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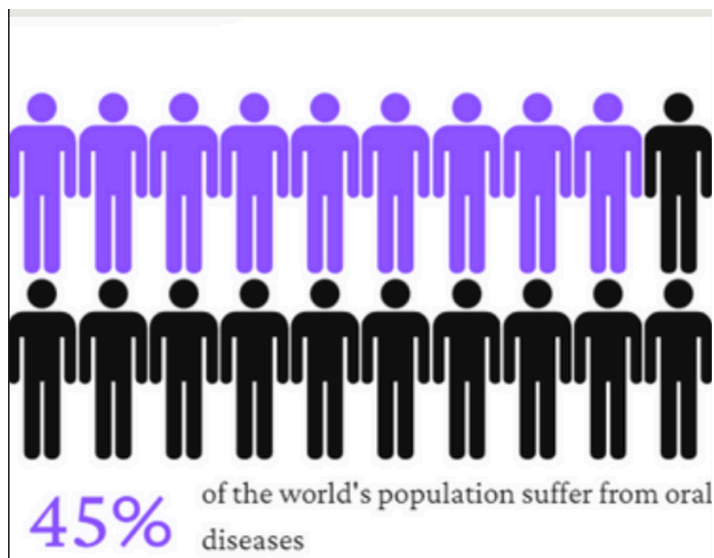
# A DENTAL REVOLUTION

## *Assessing the Impact of New Dental Technology on Dentists, Patients, and the World*

By C. Robert Graff

What is one of the primary features you notice about someone when you meet them for the first time? According to a survey by Spark™ Clear Aligners an orthodontic manufacturing firm owned by Ormco™ Corporation, 76% of Americans admit “a smile is the #1 physical trait to make a first impression of others.”<sup>1</sup> Oral health is important not only for relationships but also for our overall well-being.

Studies show that quality of life is directly correlated with the status of one’s oral health and the dental care accessible to that individual.<sup>2</sup> As shown in Figure 1, The World Health Organization (WHO) published a global oral health status report last year claiming that “almost half of the world’s population (45% or 3.5 billion people) suffer from oral diseases—a clear indication that many people do not have access to prevention and treatment of oral diseases.”<sup>3</sup> This alarming statistic fosters innovative advancements in dental technology to solve these problems, but is technology truly helping to overcome the hurdles preventing patients from treatment opportunities? Three areas affected by the rise in dental technologies stand out: (1) cost-effectiveness, (2) quality of care, and (3) doctor-patient interaction.



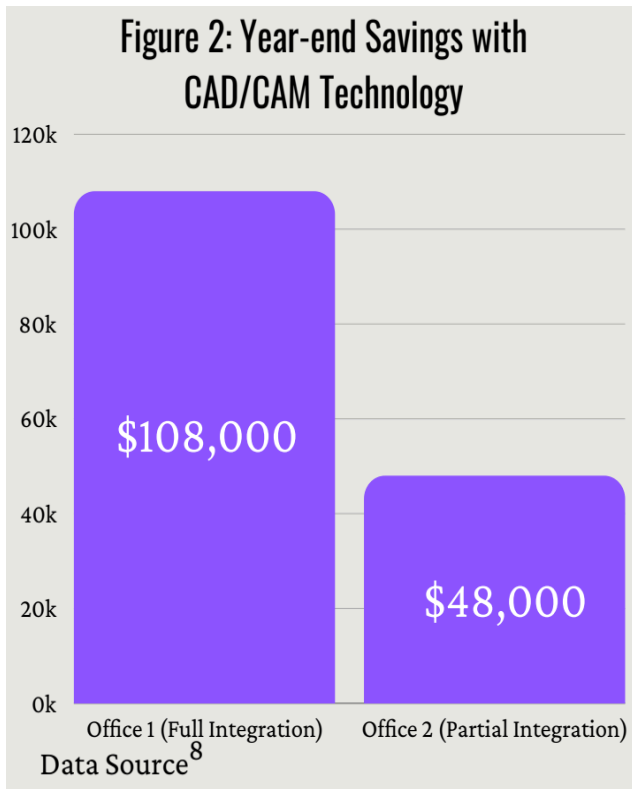
### *Cost-Effectiveness*

New dental technologies are transforming the landscape of dentistry in profound ways. One of the most significant benefits they offer is the potential to reduce the overall cost of dental care. This cost-effectiveness is primarily driven by the elimination of third-party intermediaries and the increased efficiency in dental procedures.

Traditionally, dental care has involved various third-party companies, such as insurance providers and laboratories that play a significant role in the dental ecosystem. These intermediaries often increase the cost of dental care by introducing complexities and administrative overhead. Patients and dentists must navigate through these layers, resulting in a convoluted and expensive process.

However, new dental technologies can disrupt the status quo by facilitating direct communication between patients and dental care providers. For example, telehealth solutions and digital platforms allow patients to easily interact with their dentists, schedule appointments, and access their dental records. Digital technology platforms not only streamline the administrative aspects of dental care but also reduce the cost associated with third-party services. In essence, this benefit can result in a more affordable dental care system for patients.

Moreover, the integration of advanced technologies, such as digital imaging and computer-aided design and manufacturing (CAD/CAM), can significantly improve the efficiency of dental procedures. Dr. Charles Rogers, vice president of Clinical Quality at Pacific Dental Services, helped conduct an experiment on the implementation of CAD/CAM technology and the effect on year-end expenses. Figure 2 shows in one office the year-end lab and supply expense dropped by 4.5%, translating to over \$108,000.



Innovations in computer-aided technology enable quicker and more accurate diagnoses and treatments. The increased efficiency of CAD/CAM not only saves time for both patients and dentists but also reduces the overall cost of dental care. For instance, 3D printing technology is revolutionizing the production of dental prosthetics, offering a more precise and cost-effective solution.

While the long-term cost-effectiveness of implementing new dental technologies is promising, the short-term challenges must be addressed. The initial expenses associated with adopting cutting-edge technologies in the dental field can be substantial, and determining who should bear these costs is a complex issue.

Dentists and dental practices face the need to invest in new equipment, retrain their staff, and possibly overhaul their practice infrastructure to accommodate these technologies. This upfront financial commitment can be a significant burden on practitioners. As a result, some may opt to pass on a portion of these expenses to their patients in the form of higher fees for dental services.

For patients, practitioners' choices to pass on costs could deter them from these expensive, albeit effective solutions. The International and American Associations for Dental Research published an article in the *Journal of Dental Research*. The article states that for a certain

procedure "to be preferred by a patient, the well-being associated with the greater health improvement must more than offset the reduction in well-being associated with the additional inconvenience, suffering, and costs associated with treatment."<sup>5</sup>

While patients may face higher fees, government bodies may potentially aid in the implementation of new dental technologies. Governments may consider new technology an investment in public health; advanced dental technologies can lead to improved patient outcomes and reduced long-term healthcare costs. However, the source of funding for these initiatives and their long-term sustainability are pressing concerns.

Finding a balance between the immediate financial impact of adopting new technologies and the long-term cost savings they offer is a critical consideration in the implementation stage. Determining the responsibilities of patients, dentists, and governmental bodies in managing these expenses will be essential to ensure equitable access to advanced dental care.

## Quality Control

Quality control is of paramount consideration in the implementation of new dental technologies. One of the most significant benefits is the potential to reduce the margin of error in diagnosis and treatment, ultimately enhancing the quality of care provided to patients.

Advanced dental technologies provide dentists with the tools to make more precise diagnoses and treatment plans. For example, digital imaging systems and CAD/CAM technology offer high-resolution, 3D visualization of dental issues, enabling better precision in planning and executing procedures. This enhanced precision can lead to improved patient outcomes and increased overall quality of care.

Moreover, CAD/CAM technology allows for the creation of custom-made dental prosthetics with unmatched accuracy, resulting in enhanced patient comfort and functionality. Patients can expect dental restorations that fit more perfectly and function better, contributing to a higher quality of life.

While the integration of technology can significantly improve the quality of dental care, the potential downside for overreliance on these tools is concerning. Dr. Niha Ahmed, a dental surgeon and SEO content writer, speaks on the drawbacks to dependency on dental technology

saying that technological glitches or failures “can disrupt procedures, lead to delays, and potentially compromise patient safety.”<sup>14</sup>

Dentists who become excessively dependent on technology may risk losing some of the valuable clinical skills and expertise needed in situations where technology is not available or when technical failures occur. In dental emergencies or in underserved areas where access to advanced technology may be limited or non-existent, dentists must rely on their core skills and expertise. Over-reliance on technology may lead to a decline in the development of these critical clinical skills, potentially compromising patient care in unforeseen circumstances.

Maintaining a balance between leveraging technology to enhance patient care and preserving essential clinical skills is crucial. Dental professionals must continue to refine their traditional skills to ensure they can provide the highest quality of care in all situations, even when technology is not readily accessible.

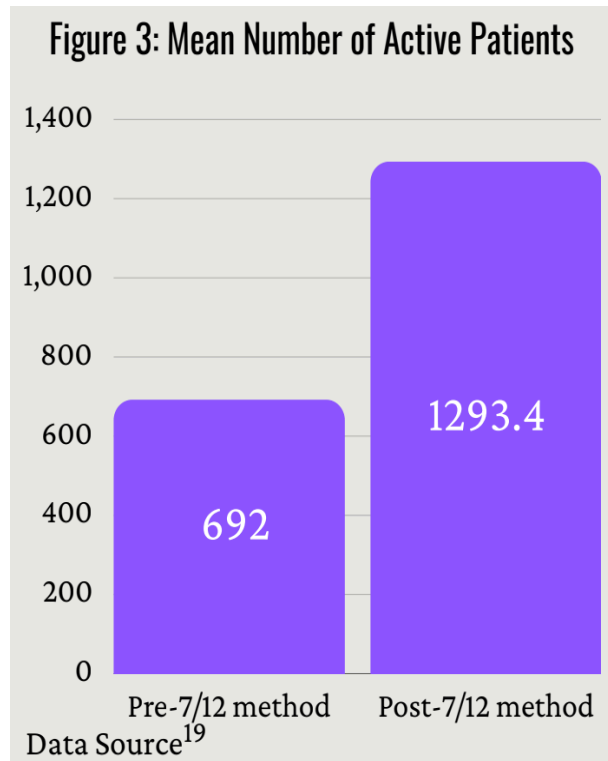
### *Doctor-Patient Interaction*

The interaction between dentists and their patients is a fundamental aspect of dental care, and new technologies are transforming this dynamic. The digital age has ushered in a new era of communication between dentists and their patients, offering benefits such as constant and far-reaching interactions and the possibility of home checkups.

The integration of telehealth solutions, patient portals, and mobile applications enables dentists to conduct remote consultations, providing flexibility and convenience for patients. In addition, those with limited mobility or residing in remote areas can access dental care more easily through these platforms.<sup>15</sup> Additionally, home monitoring devices and apps empower patients to perform routine checkups, measure vital signs, or monitor oral health indicators in the comfort of their own homes. The data can be transmitted to dentists, allowing for proactive interventions and timely adjustments to treatment plans.<sup>16</sup>

Despite the numerous benefits of technology-enhanced communication in dental care, a potential downside exists related to the personal and human connection between dentists and patients.<sup>17</sup> The British Dental Journal (BDJ) conducted a study evaluating the “7/12” patient touchpoint strategy.<sup>18</sup> The results shown in Figure 3 are that offices that employ the strategy report

an 86.9% increase in the number of active patients.<sup>19</sup> The traditional doctor-patient relationship is built on trust, empathy, and face-to-face interactions, which technology can sometimes undermine.



Patients may find that the digital interface between them and their dentist lacks the personal touch and emotional connection that stems from in-person interactions. The absence of physical presence may result in patients feeling isolated or disconnected from their healthcare providers. Additionally, the reliance on digital platforms may reduce the opportunities for dentists to assess non-verbal cues, which can be vital in understanding a patient’s emotional state and providing holistic care.

### *To Be or Not to Be*

The impact of new dental technology on dentists, patients, and the world encompasses both significant benefits and potential detriments. As dental technology continues to advance, finding the right balance will be crucial to maximize the advantages while mitigating the drawbacks. Total health is determined by oral health, which will be greatly affected, for better or worse, by new technologies. Dentists, patients, and policymakers must collaborate to ensure that the implementation of new technologies in dental care prioritizes the

well-being of patients and maintains the essential human touch in healthcare interactions.

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**ChatGBT was used in the creation of this article.**



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**Designed by: Robert Graff & Savannah Pursglove**