

## APOS Trends in Orthodontics

Editorial

# Challenges faced by solo dental practices to keep up with the technology demands of modern dental practices

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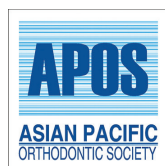
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Dental care, once delivered through small, family-run practices, has evolved into modern, digitally advanced operations. In the past, patients often developed close, long-term relationships with their dentists, who treated multiple generations within the same family. Today, single-chair practices are nearly non-existent, and solo practices are on the decline.<sup>[1]</sup> Traditional paper charts, X-ray films, impression materials, and stone models have been replaced by digital records and 2D/3D imaging. Patients are beginning to monitor their own health using technology<sup>[2]</sup> and patient expectations about the availability of new technologies at their dental care provider may be changing. A modern dental practice now relies on advanced software for holistic management, such as appointment scheduling, laboratories, billing, and patient management, with many adopting comprehensive enterprise solutions that integrate digital imaging and cloud-based record access.<sup>[3,4]</sup> The advent of technologies in dentistry, such as artificial intelligence and big data, has also altered the orthodontic landscape and ecosystem.<sup>[5]</sup>

This digital revolution is experienced across all types of practice models – practices directly owned and operated by a single business entity, practices affiliated through collaboration/franchise, and dental service organizations (DSOs, where a centralized entity manages some or all of its non-clinical functions such as billing, marketing, and human resources). However, the impact of this transformation is felt differently among the various practice models, contributing to a decline in solo practices and a corresponding rise in larger group practices.<sup>[6,7]</sup> Several factors contribute to this shift. One of the most significant factors, however, is the high cost of technology. Solo practices have limited liquid assets and limited ability to adapt to the competitive demands of the market, whereas DSOs and large group practices benefit from larger resources and may receive investor support. This affords them more agility in keeping up with technology advances, which is a competitive advantage of larger group practice models. Today, patients often equate a tech-savvy practice and a strong online presence with a dental practice's success. Other contributing factors include preference of younger dentists for flexible careers, interest in teamwork,<sup>[8,9]</sup> and the burden of educational debt which may deter the purchase of a traditional solo practice. This commentary explores these evolving technological trends in dentistry and their potential impact on different practice models.

### ENHANCED PATIENT EXPERIENCES

Evidence has shown that dental patient satisfaction can be influenced by peripheral factors such as their perception of the reception area and their perception of the quality and reputation of

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the practice.<sup>[10]</sup> Therefore, the availability of technology may also have a positive impact on patient satisfaction as it may be perceived to be linked to high-quality care. An office that embraces the latest advancements signals a commitment to continuous learning and staying current, rather than relying on outdated knowledge or equipment. This not only enhances a practice's credibility but also instills confidence in patients. As experts in our field, integrating the latest technologies reassures patients of our dedication to high-quality care and evidence-based practice.

Today, a technologically advanced practice is no longer an enhancement – it is an essential baseline component for patient care.<sup>[11]</sup> It could be computer-aided design – computer-aided manufacturing technology that enables same-day restorations with greater accuracy,<sup>[12]</sup> while augmented reality and facial scans allow patients to visualize treatment outcomes in real time. In addition, virtual reality helps reduce anxiety during procedures like root canal treatment, and tele dentistry saves up the patients' time and makes virtual consultations possible. 3D imaging allows for more precise diagnoses and treatment planning, which improves patient outcomes and satisfaction. Tools such as intraoral cameras, 3D imaging, AI-assisted treatment planning,<sup>[13]</sup> and emerging technologies such as digital mirrors facilitate patient education opportunities and promote engagement in treatment plans. These advancements are enhancing patient education and engagement in treatment plans.<sup>[3]</sup>

## CHALLENGES FACED BY SOLO PRACTICES

While technology has revolutionized dentistry and brought unprecedented convenience, it may place an impossible burden on small practices with limited ability to regularly update technological approaches to care. The digitization of dentistry has introduced layers of complexity to the core functioning of a practice and increased the entry-level expenses.

### Cost of investment

There is much scholarly musing about the expense of running a dental practice.<sup>[14,15]</sup> Rising capital investments, staff shortages, and competition from large dental organizations that can benefit from economies of scale make it more challenging for a solo practice to compete. Concurrently, solo practices are also least powerful in negotiating third-party reimbursement rates which further undermines their ability to maximize revenue. With the ability to make technology investments at scale, many group practices are leading the current wave of digitization across the industry. However, solo practitioners face increasing challenges in staying competitive, as they navigate the complexities and costs of digitization while striving to remain viable.

### Teledentistry and remote monitoring

The advent of teledentistry has radically transformed the way dental care is delivered. In particular, the rise of tele-orthodontics and remote monitoring<sup>[16]</sup> has allowed the optimization of in-office visits based on individual patient needs, fostering more efficient clinical workflows.<sup>[17]</sup> This approach not only enhances profitability by reducing chair time and material use but also aligns with the growing demand for convenience among patients attracted to today's digital age. Large-scale dental corporations are capitalizing on this shift by investing in this technology, scaling systems to increase profits, and expanding their patient base. While such advancements are more accessible to group practices, solo practitioners often struggle to invest in the high-cost software and recurring subscription fees.

### Administrative burden

While software solutions promise to streamline everything from billing and scheduling, maintaining electronic health records,<sup>[18]</sup> and cloud access to patient data, they often become a burden for solo practitioners who must navigate multiple platforms without dedicated administrative support teams like those in DSOs<sup>[7]</sup> or group practices. Without support teams, solo practitioners may have to wear various hats and troubleshoot software glitches or address building issues – time that could be better spent on patient care and revenue generation. In addition, frequent updates, subscription fees, staff training, and ongoing maintenance demand both financial and intellectual investment, making these solutions more of a challenge than a convenience to the small practice. The very automation tools that simplify operations for group practices can complicate them for solo practitioners, thus creating a competitive advantage for larger group practices.

### Patient interactions

Technology has fundamentally reshaped how patients interact with dental practices, fostering expectations of instant service and convenience – a phenomenon known as the Uberization effect.<sup>[19]</sup> Patients now expect easy online appointment scheduling and quick chatbot-assisted responses, requiring investments in both technology and staffing. For solo practitioners, adopting these tools adds complexity, as they often lack the resources to provide a 24/7 response or the investment in automation offered by larger practices. In an era where immediacy and efficiency are associated with professionalism, solo practices risk appearing outdated if they fail to meet these demands. Evidence also suggests that additional responsibilities and overwork can lead to burnout and poor work-life balance.<sup>[20]</sup> Moreover, the shift toward automation is eroding the personal touch that

defines solo practices, creating disconnect and transactional relationships with patients. Larger group practices may also have the ability to accept a larger variety of insurance plans because this flexibility relates to adequate supporting staff.<sup>[13]</sup>

### Digital presence

Digital marketing and online presence have radically transformed the way dental practices operate today. Competing against larger practices with dedicated marketing teams and extensive resources, solo practices struggle to maintain visibility. Even with an online presence, standing out remains difficult due to lack of budget or infrastructure to sustain a comprehensive online marketing strategy. This hinders new patient acquisition and further widens the gap between solo and group practices. Competing against larger practices with dedicated marketing teams and extensive resources, solo dentists struggle to maintain visibility. Even with an online presence, standing out remains difficult, often resulting in digital invisibility that hinders new patient acquisition and further widens the gap between solo and group practices.

### Privacy and security risks

As dental practices become increasingly reliant on digital tools, the risk of cybersecurity attacks, data breaches, and privacy violations grows. Technology offers powerful tools for managing client information, but these tools also create new vulnerabilities. With rising cyber-attacks and the increasing complexity of data protection laws,<sup>[22]</sup> solo practitioners may find themselves struggling to maintain adequate security measures without the resources of a larger organization. Whether you run a large dental organization or a solo practice, a data breach can lead to severe impacts on reputation and finances. DSOs and group practices, on the other hand, can invest in technology that protects them from cybersecurity attacks and have specialized staffing to focus on data protection.

### SHIFT IN THE PRACTICE MODEL

It is not surprising to know that only 38% of dentists, who are predominantly boomers, in the US, were practicing solo in 2023,<sup>[23]</sup> while millennials, who represent a larger segment of the current dental workforce,<sup>[6,24,25]</sup> prefer to work in group practices or DSOs. In 2023, 26.0% of new dentists (those <10 years out of dental school) were affiliated with group practices with at least 10 locations, up from 24.2% in 2022.<sup>[6]</sup> Clinicians are motivated to increasingly affiliate with DSOs to reduce the burden of student debt,<sup>[26]</sup> offload administrative burdens, gain access to cloud-based systems and modern technology, focus solely on patient clinical care, and improve work-life balance.<sup>[6]</sup>

### FUTURE DIRECTIONS

As technology advances and patient expectations rise, the financial burden on solo practitioners to keep up with these advancements becomes increasingly prohibitive. The collective effect of these technological advancements is that, in the long run, small practices will face more challenges to compete with the offerings provided by larger group practices. Group practices can leverage their resources to access the latest technology, have administrative staff to focus on important matters such as quality of care and cybersecurity, and negotiate with third-party payers. Although solo dental practices are the historic model in dentistry, the profession has transformed rapidly, and solo practice models are at risk.

Solo practices need to adopt innovative strategies, shift strategically to the changing needs of the market, foster collaborations, and focus on enhancing patient experiences to stay competitive. This may include making investments in skill development, technological improvements, establishing partnerships, or considering alternative practice models to ensure sustainability in the contemporary dental industry. Since the DSO model enables small practices to remain small but leverages the advantages of large practices through administrative collaboration, the DSO model is likely to dominate the dental profession in the decades to come.

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